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# Coho Salmon (*Oncorhynchus kisutch*) Escapement Studies in Black Creek, French Creek, and Trent River, Vancouver Island, 1990

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# COHO SALMON (*Oncorhynchus kisutch*) ESCAPEMENT STUDIES IN BLACK CREEK, FRENCH CREEK, AND THE TRENT RIVER, VANCOUVER ISLAND, 1990

by

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## ABSTRACT

Nass, B. L., R. C. Bocking, R. E. Bailey, and J. R. Irvine. 1993. Coho salmon (*Oncorhynchus kisutch*) escapement studies in Black Creek, French Creek, and Trent River, Vancouver Island, 1990. Can. Manuscr. Rep. Fish. Aquat. Sci. 2205: 69 p.

Coho salmon escapements to Black Creek and French Creek were monitored using adult counting fences and upstream mark-recapture surveys between September 27 and December 13, 1990. Escapements to the Trent River were estimated by mark-recapture surveys conducted between October 23 and November 21. Estimated adult coho escapements, excluding fish provided for hatchery broodstock, were 1237 and 228 at Black Creek and French Creek, respectively, using an open simulation model. Estimated adult escapement to Trent River was 718 using a Bayesian mark-recapture model. Jack escapements to Black and French Creeks were estimated to be 1328, and 365, respectively. Black Creek and Trent River adult coho were larger than French Creek adults while jack coho had similar lengths at all 3 systems. There were fewer adult males than females at Black Creek; however, including jacks, males outnumbered females at Black and French Creeks, but not at Trent River.

# RÉSUMÉ

Nass, B. L., R. C. Bocking, R. E. Bailey, and J. R. Irvine. 1993. Coho salmon (*Oncorhynchus kisutch*) escapement studies in Black Creek, French Creek, and Trent River, Vancouver Island, 1990. Can. Manuscr. Rep. Fish. Aquat. Sci. 2205: 69 p.

Entre le 27 septembre et le 13 décembre 1990, on a examiné les échappées de saumons cohos vers les ruisseaux Black et French au moyen de barrières de dénombrement des individus adultes et d'études de marquage-recapture en amont. Les échappées vers la rivière Trent ont été évaluées grâce à des techniques de marquage-recapture, entre le 23 octobre et le 21 novembre. Les échappées estimatives de cohos adultes, à l'exclusion des stocks reproducteurs des frayères, se chiffraient à 1 237 et 228 cohos dans les ruisseaux Black et French, respectivement, d'après un modèle de simulation ouvert. L'échappée estimative de saumons adultes vers la rivière Trent a été de 718, selon un modèle bayesien de marquage-recapture. Les échappées de juvéniles mâles à maturité précoce vers les ruisseaux Black et French ont été évaluées à 1 328 et 365, respectivement. La taille des cohos adultes du ruisseau Black et de la rivière Trent était supérieure à celle des adultes du ruisseau French, alors que les juvéniles mâles à maturité précoce étaient de longueur similaire dans les trois réseaux hydrographiques. Il y avait moins de mâles adultes que de femelles dans le ruisseau Black; par ailleurs, les mâles, juvéniles à maturité précoce compris, était plus nombreux que les femelles dans les ruisseaux Black et French, mais non dans la rivière Trent.

# INTRODUCTION

This report summarizes the fence count and upstream mark-recapture escapement estimation studies at Black Creek, French Creek, and the Trent River during 1990. Fish counting fences were operated in each of these systems between 1985 and 1989 (Labelle 1990, Bocking et al. 1992). Because the adult counting fence in the Trent River was poorly located and prone to flood damage, it was not operated in 1990. The primary purpose of the fall escapement studies was to estimate numbers of returning salmon in each system and to collect coded-wire tagged heads from returning fish.

## STUDY STREAMS

Black Creek is a small stream on the east coast of Vancouver Island, approximately 30 km north of Courtenay (Fig. 1). It is approximately 26 km long stream, 5-6 m wide in its middle reaches, originates in a forested region as a steep mountain stream and, in its lower elevations, the stream meanders slowly through agricultural land. Many small lakes, swampy areas, beaver ponds, and several tributaries occur in the lower watershed (Fig. 2).

French Creek is also a small stream draining the southeast side of Vancouver Island. It originates on the eastern slopes of Mount Arrowsmith, and flows northeasterly until it enters the Strait of Georgia west of the town of Parksville (Fig. 1). French Creek is approximately 20 km long and averages 12 m in width at its middle sections (Fig. 3). Numerous small falls that are passable for upstream migrating adult coho exist in the mainstem between 7 and 13 km from the ocean.

The Trent River is a medium stream on the eastern side of Vancouver Island, entering the Strait of Georgia 5 km south of Courtenay (Fig. 1). The main section of the river is 30 km long, but only the lower 9 km are accessible to anadromous fish due to a 15 m high falls. The average width of the river in the lower 9 km is 16 m. Seven kilometres from the estuary, Bloedel Creek connects to the mainstem, but only the first 500 m of this creek are accessible to mature coho. China Creek is another important tributary and spawning area for coho and is located 4.5 km from the river mouth (Fig. 4).

Bocking et al. (1992) provide more detailed descriptions of the watersheds and their fish populations.

# METHODS

## BIOPHYSICAL MONITORING

Water temperatures were recorded daily at the counting fence locations on each stream between 0800h and 0900h using max-min thermometers. Water levels were monitored to the nearest 0.01 m. Water levels at Black Creek were recorded from a staff gauge located 200 m upstream from the Seaview Road bridge, outside the influence of the smolt fence. Stream levels at French Creek were recorded from a gauge located about 100 m downstream of the juvenile fence, outside the area of influence of the fence. The staff gauge on the Trent River was located 100 m downstream from the E&N railway trestle and 150 m upstream from the smolt fences.

Discharge was estimated at French and Black Creeks and the Trent River using relations between the staff gauges and Water Surveys of Canada discharge estimates for the previous year.

Weather conditions were monitored daily. Precipitation was ranked on a scale of 0 to 5 with 0 being no rain and 5 being a deluge. Percentage cloud cover, wind direction, and wind speed were also noted.

## POPULATION ESTIMATES

### Fish Counts

Collapsible counting fences were installed in Black and French creeks prior to the first fall rains (around October 1) according to the methods and designs described in Labelle (1990), and Bocking et al. (1992). Each fence was composed of a series of wood frame panels with aluminum tube insets. To increase the catchability of small adult and jack coho, which were able to squeeze between the aluminum tubing, additional "jack panels" (Bocking et al. 1992) were placed on top of the main panels during low flow and low debris conditions. The jack panels were easily removed for cleaning of leaves and debris. If high water was anticipated overnight, the panels were removed and replaced on the fence the following morning, if water conditions permitted.

All salmonids, primarily coho, caught in the trap boxes at the counting fences were counted and most were released upstream. Coho were classified as adult or jack (precocious male) and the sex of each adult fish recorded. All fin and maxillary clips were recorded and

degrees of maturity estimated (Bocking et al. 1992). Any mortalities at the fence, either naturally occurring, or due to handling, were recorded. Some adult coho at French Creek were removed at the counting fence and provided to the local Public Involvement Program hatchery for broodstock. All coho released upstream were given a uniquely numbered tag (Ketchum #1 operculum tag). Different tag colours were used for coho from each watershed. Operculum tags were applied while fish were subdued in a canvas cradle. Fish were sampled for length and scales at this time.

At the Trent River, all sampling occurred upstream during tangle-netting surveys. Upon first capture, each fish was measured, sampled for length, scales, clips, degree of maturity, and operculum tagged and released. Any mortalities were also recorded, as at French and Black Creeks.

Mark-recapture Estimates

In this report we refer to fish with opercular tags as tagged fish and fish with coded wire tags (adipose-clipped fish) as marked fish. Operculum tagged fish were recovered upstream throughout the escapement period using electrofishing and tangle netting as described in Bocking et al. (1992). Electrofishing was primarily used at Black Creek while tangle netting was the most used capture method at Trent River. We used a combination of tangle netting and electrofishing at French Creek.

Untagged coho recovered during upstream surveys were also given a numbered operculum tag. In Black and French Creeks, all opercular tags applied at the counting fence were classified as primary tags and those applied to untagged fish upstream were classified as secondary tags. Tag recovery surveys were conducted on six days at Black Creek, four days at French Creek, and on four days at Trent River. Recovery effort was conducted approximately in proportion to the distribution of coho in the river as determined from independent visual foot and/or swim surveys (Table 1).

We generated mark-recapture estimates of the spawning populations in Black and French Creeks using three different models; an open population simulation model (Labelle 1990), a sequential Bayesian model (Gazey and Staley 1986), and a Petersen model (Ricker 1975).

Tag Loss and Straying

All coho captured during upstream mark-recapture surveys were examined for operculum tags. Missing tags were noted by clear evidence of scarring due to the former presence of a tag. Fish which strayed from the systems of study to adjacent streams and were captured and handled in those streams (e.g., Puntledge River, and Roy Creek) were noted and accounted for in the estimates of coded-wire tag contributions and the Petersen

mark-recapture estimates for the Trent River. The Bayesian population estimates did not account for straying of tagged fish from the Trent River.

## AGE, LENGTH, AND SEX COMPOSITION

Live coho captured were measured for postorbital-hypural length and examined for fin clips, sex, and maturity. Scale samples (Henry 1961) were taken from new captures of coho, either at the fences or upstream. On upstream surveys only untagged coho were sampled for age, length, and sex. Maturities were recorded for both newly captured coho and from recaptured fish. Sex ratios were calculated from the total recovery sample. Average lengths were calculated separately for live recoveries at the fences (Black and French Creeks) and upstream recoveries, and were stratified by sex and age (adult or jack). We calculated separate length estimates for coho captured at the fences and during upstream recoveries because the different recovery methods may be size selective.

## PUBLIC INVOLVEMENT PROGRAM HATCHERY RETURNS

All coho captured were examined for ventral fin and maxillary bone clips which would identify them as hatchery outplanted fish. Hatchery fry releases into French Creek and Trent River in 1988 and 1989 are summarized in Nass et al. (1993).

We estimated the number of eggs per female coho at French Creek, using females supplied to the hatchery for broodstock. A 50 g sample of eggs was taken from each female spawned, the eggs counted, and the total egg count estimated by extrapolating the count to the entire mass of that female's eggs. Length and scale samples were also taken from these fish.

## CODED-WIRE TAG RECOVERIES

Juvenile coho from the 1987 and 1988 brood years were marked with binary coded wire tags (CWT) as smolts in the spring of 1989 and 1990, respectively, during their outmigrations. Adipose fins of CWT'd juveniles were clipped prior to release (Bocking et al. 1991, Nass et al. 1993).

Adult and jack coho carcasses recovered were counted and the date of recovery, operculum tag number (if tagged), postorbital-hypural length, fin clips, and location found were recorded. Heads were removed from adipose-clipped carcasses, labelled by stream, date, opercular tag number, other fin clips, length, and individually wrapped and frozen. Tags were removed and decoded by the DFO Head Recovery Lab after the conclusion of the field program. Once counted, all carcasses were cut in half to prevent resampling during future surveys.

To determine the contribution of marked smolts from the 1987 and 1988 brood years to the 1990 escapement, we used the three-step process given by Bocking et al. (1992). Assuming that the survival of unmarked fish was equal to or greater than that of marked fish, this method estimates the minimum contribution of each tag code to the escapement.

Adipose-clipped adult males, adult females, and jacks were enumerated separately. The mark-recapture estimates for adults were then apportioned between males and females based on the sex ratio observed in the total live recovery. The live recovery samples were then used to estimate the adipose clipped escapement, stratified by adult males, females, and jacks. Sex specific population estimates for adult males and females were determined from sex ratios at the fence, or using upstream captures (Trent River). Given an estimate of the total number of adipose clips for each sex and cohort escaping to the stream, the number of adipose clips for each tag code was estimated by the allocation of adipose clips to tag codes based on their relative frequency in the sample of decoded tags.

# RESULTS

## BIOPHYSICAL MONITORING

Daily water temperatures at Black Creek ranged from 3.0°C to 11.0°C. French Creek water temperature ranged from 3.0°C to 13.0°C, and water temperatures at the Trent River ranged from 3.0°C to 13.0°C (Fig. 5). Staff gauge readings observed on the three systems during fall 1990 are also presented in Figure 5. Discharge ranged between 0.0 and 6.0 $m^3/s$ at Black Creek using the stage-discharge relation for 1989 (Bocking et al. 1992). We did not obtain in-stream measures of discharge at French Creek and Trent River and the 1989 relations derived for these systems were no longer applicable due to major changes in channel morphology at both systems. During the study period, at least three major floods occurred at each system.

## COUNTING FENCE RESULTS

The Black Creek and French Creek fences were operated 24h per day October 5 - November 23 and September 27 - November 10, respectively. At each site, the jack panels were removed several times so the fence count of jack and small adult coho may be incomplete.

A total of 808 adults and 579 jacks were counted at Black Creek, of which 808 adults and 485 jacks were tagged and released upstream (Table 2). Eighty five jacks were sacrificed at the Black Creek fence for CWT recoveries. Adult fish appeared to migrate upstream in 3 pulses (Fig. 6). Only fish from the first day of the third pulse were sampled as the fence was dropped late that day due to flooding. Based solely on fence counts, the largest migration of jacks occurred on the first day of captures at the fence; however, this observation could be biased because of jack panel removals and periods that the fence was down.

At French Creek, 114 adults and 78 jacks were counted at the fence (Table 2). Eleven adult coho were provided to the French Creek Hatchery for broodstock, and the remaining adults were tagged and released upstream. We observed 2 pulses of migrating fish at French Creek before the fence was collapsed due to flooding (Fig. 7).

## MARK-RECAPTURE ESTIMATES

Nine hundred and sixty two adult and 632 jack coho were examined at the fence and upstream at Black Creek in 1990. Eight hundred and ninety five adult and 523 jack coho were tagged and released between October 25 and December 13, and of these, 88 adult and 38 jacks were tagged during upstream surveys. At French Creek, we examined 132 adult and 119 jack coho. Of the tagged coho, 8 adult and 34 jacks were tagged upstream. At Trent River, we examined 262 adult and 32 jack coho. Of these, 205 adults and 27 jacks were tagged and released on upstream mark-recapture surveys between October 23 and November 28, and 24 adults were provided to the Courtenay Fish and Game Club for broodstock.

Of the tagged fish recovered upstream at Black Creek, 16 fish or 7.6% had lost the operculum tag. At French Creek, no tag loss was observed, and at Trent River, tag loss was 0.7%. All tag recaptures, including tag losses, were included in the population estimation analyses.

Six adults tagged on upstream surveys at the Trent River were recovered in the Puntledge River, and five others were recovered in Roy Creek.

Table 3 lists the population estimates for Black Creek and French Creek adult and jack coho and their respective HPD regions generated using the open simulation model. Using this method, the 1990 spawning populations of adult and jack coho to Black Creek were estimated to be 1237 and 1328, respectively, and to French Creek, 228 and 365, respectively.

Table 4 lists the population estimates generated using the Bayesian estimator. An estimated 2048 adults and 1957 jacks spawned in Black Creek, 224 adults and 570 jacks in French Creek, and 718 adults and 76 jacks to Trent River. For Black Creek and French Creek, we ran the model using (1) primary tag data and (2) primary plus secondary tag data to document any differences in the means or HPD regions. In most cases, pooling the data had little effect on the mean, but did decrease the bounds of 95% HPD.

Petersen population estimates and respective confidence limits for adult and jack coho populations in the three systems are presented in Table 5. An estimated 2020 adults and 1875 jacks spawned in Black Creek, 220 adults and 539 jacks in French Creek, and 1654 adults and 231 jacks to Trent River.

## AGE, LENGTH, AND SEX COMPOSITION

Mean lengths and the associated standard deviations for adult and jack coho in Black Creek, French Creek, and Trent River are presented in Table 6. We used a length delimiter of 35 cm to distinguish between jacks and adult males on all systems. The 35 cm delimiter is based on CWT and length data from previous years (Bocking et al. 1992). There were significant differences between the mean lengths of adult male and female coho at Black Creek ($t=8.84$, $P<0.001$), French Creek ($t=3.17$, $P<0.01$) and Trent River ($t=2.68$, $P<0.01$). No significant differences were observed between the lengths of adult male or adult female coho caught at the fences versus those caught during the upstream surveys (Black Creek males: $t=0.08$, $P>0.2$, females: $t=1.08$, $P>0.2$; French Creek males: $t=0.04$, $P>0.2$, females: $t=1.55$, $P>0.1$); however, there were significant differences in the lengths of Black Creek and French Creek jacks caught at the fence and those caught upstream (Black Creek: $t=9.07$, $P<0.001$; French Creek: $t=4.94$, $P<0.001$). The lower mean lengths of jacks encountered upstream indicate that jacks, and especially smaller ones, may escape through the counting fences when jack panels are not in place.

The mean length of adult male coho was similar at Trent River (47.6 cm) and Black Creek (47.5 cm) (t-test, $P > 0.2$). French Creek adult males (mean = 44.1 cm) were significantly smaller than Black Creek or Trent River males (t-test, $P < 0.001$). Black Creek adult females (mean = 51.6 cm) were significantly larger than Trent River females

(49.8 cm), which were significantly larger than French Creek females (46.7 cm) (t-test, $P < 0.05$). The mean lengths of jack coho were similar at Black Creek (28.6 cm) and Trent River (28.7 cm) and slightly smaller at French Creek (26.2 cm).

Adult males at Black Creek ranged in size from 35 to 70 cm. The median length of jacks was 29 cm. Most female adults were in the 50 - 60 cm range (Fig. 8). Figure 9 presents the length frequency for Black Creek coho of known ocean age, aged by CWT recovery. Tags from five fish, identified as adult males, were successfully decoded, one of which was a jack. At French Creek, adult males ranged from 36 cm to 56 cm. Jacks varied in length from 18 cm to 34 cm, and were most common in the 26 and 27 cm size classes. There were no mis-identifications of fish of known ocean age, as determined by CWT's. Female coho were 38 cm and 59 cm (Fig. 10). In the Trent River, adult males were between 37 and 62 cm and jacks between 25 and 33 cm. There were two adults misidentified as jacks, based on CWT data. Females ranged from 38 to 61 cm (Fig. 11).

The ratio of total adult males:adult females:jacks handled varied among systems. The ratio was 25.1:34.3:40.5 for Black Creek, 23.8:28.0:48.1 for French Creek, and 41.2:48.0:10.9 at Trent River. As mentioned previously, the proportion of jack coho in each population is probably underestimated due to their lower catchability; however, the proportions may also be overestimated due to misidentification of adult males as jacks. The ratio of adult males to females in Black Creek was significantly different from 50:50 ($\chi^2=21.35$, $P<0.001$). In contrast, adult male to female ratios were not significantly different from 50:50 at Trent River ($\chi^2=1.53$, $P>0.20$) and French Creek ($\chi^2=0.81$, $P>0.30$). When all males (adults and jacks) were compared with females, the ratios were significantly different for Black Creek ($\chi^2=149.06$, $P<0.001$) and French Creek ($\chi^2=46.13$, $P<0.001$), but not for Trent River ($\chi^2=0.49$, $P>0.8$) (Table 7).

There were 168, 72, and 22 scale samples aged successfully from Black Creek, French Creek, and Trent River, respectively (Table 8). All scale samples taken were resorbed. Freshwater age one coho were most abundant for adults and jacks at all three systems; between 68% and 94% of the fish aged had reared in freshwater for one year.

## PUBLIC INVOLVEMENT PROGRAM HATCHERY RETURNS AND FECUNDITY ESTIMATES

Table 9 lists the number of coho examined at the fences and on upstream surveys, and the numbers of adipose and secondary clipped coho observed. At Black Creek, only two adult coho had a clip other than adipose (<0.3%). At French Creek, 11 adult coho had fins or bones (predominantly right maxillary) other than the adipose clipped, representing an estimated 10.8% of the total escapement of adult coho. In addition, 12 jack coho at French Creek had clips (predominantly left maxillary), representing an estimated 13.5% of the total

adipose clipped jack escapement. At the Trent River, 52.2% of the adipose clipped adults examined were of hatchery origin, and right ventral fin clips were the most common secondary clip. Of the few jacks examined at the Trent River, 71.4% had fin clips other than adipose and those were predominantly left ventral clips. Estimates of the numbers of clipped coho escaping to the streams may be negatively biased due to regeneration of clipped fins.

Female coho provided to the French Creek hatchery for broodstock had a mean length of 51 cm and a mean estimated fecundity of 2526 eggs (Table 10). Only one of these fish was successfully aged for freshwater residence, and it was one year.

## CODED-WIRE TAG RECOVERIES

Coded-wire tagged (adipose clipped) coho smolts migrating from Black Creek, French Creek, and Trent River in 1989 and 1990 were captured as adult and jack coho, respectively. In 1990, there were 1372 adipose-clipped coho observed in Black Creek, 200 in French Creek, and 120 in Trent River. The total number of adipose-clipped coho estimated to have returned to Black Creek, French Creek, and Trent River in 1990 were 2315, 496, and 324, respectively (Table 11). Of the estimated escapements of adipose clipped fish, 132 CWT heads from fish at Black Creek were decoded, 30 were decoded from French Creek, and 17 were decoded from Trent River. Contributions of various tag code groups (migration timing period, smolt size, and wild or hatchery outplant) to the total escapements in Black Creek, French Creek, and Trent River are presented in Tables 12, 13, and 14, respectively. Smolt to returning adult survivals varied among the various tag groups. At Black Creek, smolts which migrated in the latter half of the 1989 smolt migration (May 16 - June 23) had higher ocean survival rates than smolts which migrated in the first half (April 13 - May 15). In contrast, the contribution of 1990 smolts to the jack escapement at Black Creek showed the greatest return from smolts migrating in the first half of the study period. The 1989 smolt to adult survival rates of small coho smolts (4.26%) was higher than that for large smolts (2.52%). In contrast, the 1990 smolt to jack survival rate of small smolts (0.30%) was lower than that observed for large coho smolts (1.92%).

At French Creek, smolt to returning adult survivals were highest for smolts migrating in the second tagging period of 1989 (May 11 - May 19). No returns were observed from smolts marked during the final tagging period of 1989 (Table 13). There were insufficient data to assess the relative survivals to jacks of 1990 smolts among tagging periods, and between wild and hatchery outplant origin smolts. One stray adult coho from the Big Qualicum River was recovered in French Creek.

At Trent River, smolt to returning adult survivals were highest for both wild smolts, and smolts resulting from outplants of hatchery fry leaving the system in the first half of the

study period in 1989 (Apr 30 - May 24) (Table 14). No tags were recovered from any coho that migrated to sea during the 1990 smolt migration, therefore, we are unable to make any statements concerning their survival.

The proportions of adipose-clipped adults and jacks in the 1990 escapements at Black Creek, French Creek and Trent River varied by year of smolting and system. At Black Creek in 1990, 95.0% of the jacks and 88.4% of the adults were estimated to be adipose clipped. At French Creek, 78.0% of the jacks and 87.3% of the adults were estimated to be marked, and at the Trent River, only 22.0% of the jacks and 43.9% of the adults were estimated to be adipose clipped.

## DISCUSSION

We have most confidence in our estimates of escapement to Black Creek and French Creek generated using the open simulation model (Labelle 1990). We estimated instream populations of 1237 adults and 1328 jacks at Black Creek, and 228 adults and 365 jacks at French Creek. The Labelle (1990) open model could not be used on the Trent River in 1990 because the model requires fence capture data. We used the Bayesian estimator to generate escapement estimates of 718 adults and 76 jacks for the Trent River. We feel this estimate for jacks is low. The number of captures of jacks made during tangle-netting surveys in the Trent River was low compared to the numbers observed during snorkel surveys. A more reasonable escapement estimate of 248 jacks was obtained when snorkel survey data were expanded using the area-under-the-curve method (Irvine et al. 1992).

Adult coho enumerated at the counting fences accounted for 65.3% and 50.0% of the open simulation model escapement estimates at Black Creek and French Creek, respectively. Counts of jack coho at each fence were 43.6% and 21.4% of the open model estimates at Black Creek and French Creek, respectively. Fence capture rates were low because the counting fences were collapsed for a large period of the run. The proportionally greater sampling rate for jacks at Black Creek versus French Creek is probably the result of the greater use of jack panels on the Black Creek fence.

We used a postorbital-hypural length of 35 cm to differentiate between adult males and jack coho on all three systems in 1990. This procedure worked well in the field because the inflexibility of the method eliminated observer subjectivity. Based on CWT data, there was only one misidentification of an adult coho as a jack at Black Creek and one at Trent River using this procedure. There were no misidentifications at French Creek. There was an additional misidentification of an adult coho as a jack at Black Creek and one at Trent River when a crew member examined a coho without using a measuring device.

Early in the migration, when we were catching predominantly jack coho at the Black Creek counting fence, there was some uncertainty in the classification of small female coho: A few coho as small as 27 cm were classified as females based on morphological characteristics, however, it is unlikely that these fish were adult females.

The freshwater ages of returning adult coho at French Creek (92.5% age 1, 7.5% age 2) and Trent River (94.1% age 1, 5.9% age 2) were similar to the freshwater age structures of the smolts from those systems in 1989 (95% age 1, 5% age 2; 97.2 age 1, 2.8% age 2), respectively. At Black Creek the freshwater age distribution of the returning adults was less similar to that of the 1989 smolts (1990 adults: 73.3 age 1, 26.3% age 2; 1989 smolts: 84.7% age 1, 15.1% age 2). The freshwater ages of jack coho in 1990 were dissimilar to the age structure for outmigrating coho smolts in 1990 at all three systems. In each of the three systems, the proportion of age 1 samples was at least 10% lower than that in the smolts and visa-versa for age 2 samples.

We calculated the percentage of 1989 and 1990 smolts that returned to spawn as adults or jacks in 1990, respectively, by dividing the estimated escapement by the number of smolts captured and released in the respective smolt year. Adult escapement to Black Creek represented 4.20% of the smolts released in 1989 and jack escapement represented 1.12% of the smolts released in 1990. At French Creek, 3.05% of the 1989 smolts and 1.64% of the 1990 smolts resulting from hatchery outplants survived as adults and jacks, respectively. Wild adult and jack smolt to escapement survivals were 1.79% and 0.85%, respectively. These values indicate that in the 1990 escapement hatchery adults and jacks had a greater survival to escapement than wild fish. These results contrast with those for jack escapement in 1989 (Bocking et al. 1992). Hatchery origin adult escapement to Trent River was 4.23% of the outplanted smolts in 1989 and hatchery origin jacks represented 3.47% of the outplanted smolts from 1990. Wild adult and jack escapement was 9.91% and 1.33%, respectively. Therefore, wild adult coho had a larger proportional return than outplant origin adults and outplant jacks returned at a greater rate than wild jacks. Wild jack coho had a greater return in the 1989 escapement (Bocking et al. 1992). Differences in the proportional returns of hatchery and wild coho to French Creek and Trent River suggest that ocean survival and jacking rate varies between systems and between outplants and wilds. No catch data were analyzed, therefore, the observed ocean mortality includes harvest and naturally occurring mortality. Survival to escapement data may be strongly influenced by changing patterns of harvest; hence, only marginally reflective of smolt to adult survival.

The proportions of adipose clipped coho in the 1990 escapement were largest at Black Creek (91.8%). French Creek had a slightly lower contribution of adipose-clipped fish in the escapement (81.6%), and at Trent River, only 39.7% of the returning fish were marked. Virtually all outmigrating smolts caught at downstream fences were CWT'd, therefore, the lower adipose-clip rates at French Creek and Trent River are likely due to smolts emigrating from these systems either during floods, or prior to or after smolt fence operations. Regeneration of adipose fins and misidentification of adipose clips by field crew may occur, but is probably not substantial.

Coded-wire tag returns from the various smolt migration timing groups at Black Creek suggest that ocean survival of coho smolts varied among smolt timing and size groups. The smolt to returning adult survivals for various smolt timing and size groups at Black Creek and French Creek suggest that smolts which migrate near the peak of migration have a greater survival to escapement than do smolts which migrate at other times. There were insufficient data to assess for similar relationships at Trent River. Data for jacks at Black Creek indicate that smolts greater than 120 mm in length were more likely to return as jacks than were smaller smolts, and this likelihood was more pronounced in early migrating smolts. Further years of study at Black Creek are required to provide replications for detailed analyses of ocean survival among smolt timing and size groups.

At French Creek and Trent River smolts of hatchery outplant origin and wild smolts were coded-wire tagged with different tag codes. We were unable to capture enough jacks in the 1990 escapement to these systems to analyze CWT returns for differences in return rates between different timing and origin groups.

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Table 1. Mark-recapture upstream recovery effort at Black Creek, French Creek, and the Trent River, 1990. See Figures 2, 3, and 4 for stratum locations.

| System | Date | Stratum | Recovery method | Distance sampled (m) |
|---|---|---|---|---|
| Black | Nov-06 | C | Electrofisher | 500 |
| | Nov-06 | D | Electrofisher | 250 |
| | Nov-19 | F | Electrofisher | 500 |
| | Nov-20 | D | Electrofisher | 500 |
| | Dec-10 | F | Electrofisher | 400 |
| | Dec-11 | D | Electrofisher | 250 |
| | Dec-11 | F | Electrofisher | 250 |
| | Dec-13 | F | Dip nets | 500 |
| French | Nov-03 | D | Electro/tangle net | 600 |
| | Nov-04 | A | Electrofisher | 250 |
| | Nov-04 | B | Electrofisher | 350 |
| | Nov-04 | D | Electrofisher | 250 |
| | Nov-04 | E | Electrofisher | 250 |
| | Nov-04 | F | Electrofisher | 150 |
| | Nov-21 | D | Electrofisher | 750 |
| | Nov-21 | E | Electrofisher | 500 |
| | Nov-22 | A | Electrofisher | 250 |
| | Nov-22 | B | Electrofisher | 250 |
| | Nov-22 | F | Electrofisher | 1000 |
| Trent | Oct-23 | A | Tangle nets | 150 |
| | Nov-02 | D | Tangle nets | 50 |
| | Nov-02 | C | Tangle nets | 50 |
| | Nov-02 | C | Tangle nets | 100 |
| | Nov-02 | A | Tangle nets | 150 |
| | Nov-08 | C | Tangle nets | 150 |
| | Nov-08 | B | Tangle nets | 100 |
| | Nov-08 | A | Tangle nets | 100 |
| | Nov-21 | C | Tangle nets | 100 |
| | Nov-21 | B | Tangle nets | 100 |
| | Nov-21 | A | Tangle nets | 100 |

Table 2. Total coho captured and released at the adult counting fences at Black Creek and French Creek, and upstream at Trent River, 1990.

| System | Age | No. caught | No. provided for broodstock | No. sacrificed for sampling | No. released | No. untagged | No. tagged |
|---|---|---|---|---|---|---|---|
| Black | Adults | 808 | 0 | 0 | 808 | 1 | 807 |
| | Jacks | 579 | 0 | 94 | 485 | 0 | 485 |
| French | Adults | 114 | 11 | 0 | 103 | 0 | 103 |
| | Jacks | 78 | 0 | 0 | 78 | 2 | 76 |
| Trent | Adults | 262 | 24 | 6 | 232 | 27 | 205 |
| | Jacks | 32 | 0 | 2 | 30 | 3 | 27 |

Table 3. Open population model estimates (Labelle, 1990) of adult and jack coho populations at Black Creek and French Creek, 1990. Upper and lower bounds are the 95% highest probability density regions (HPD).

| | | Maximum Liklihood | | |
|---|---|---|---|---|
| System | Age class | N | Lower HPD | Upper HPD |
| Black | Adults | 1237 | 880 | 1547 |
| | Jacks | 1328 | 768 | 2668 |
| French | Adults | 228 | 137 | 567 |
| | Jacks | 365 | 144 | 1034 |

Table 4. Estimates of the stream populations of adult and jack coho at Black Creek, French Creek, and Trent River, 1990, generated from the Bayesian model using (a) primary, and (b) primary plus secondary tag, mark-recapture results. For Trent River, all tags applied upstream were pooled as there was not a fence this year. Included are the 95% maximum likelihood highest probability density regions (HPD).

| | | Primary | | | Primary + Secondary | | |
|---|---|---|---|---|---|---|---|
| System | Age | N | lower HPD | upper HPD | N | lower HPD | upper HPD |
| Black | | | | | | | |
| | Adults | 2048 | 1616 | 2652 | 2036 | 1608 | 2632 |
| | Jacks | 1957 | 1160 | 3697 | 2013 | 1190 | 3787 |
| French | | | | | | | |
| | Adults | 224 | 120 | 496 | 226 | 120 | 496 |
| | Jacks | 570 | 260 | 1650 | 530 | 250 | 1480 |
| Trent | | | | | | | |
| | Adults | 718 | 518 | 1044 | na | na | na |
| | Jacks | 76 | 40 | 472 | na | na | na |

na = not applicable

Table 5. Petersen population estimates, confidence limits, and enumeration data for coho salmon adults and jacks in Black Creek, French Creek, and the Trent River based on live tagging of coho, 1990. Confidence limits are from fiducial limits for the Poisson distribution using Pearson's formulae when R is greater than 50 (Ricker 1975, p.343).

| System and item | Adults | Jacks | Total |
|---|---|---|---|
| **Black Creek** | | | |
| Number tagged | 807 | 485 | 1292 |
| Number recovered | 154 | 53 | 207 |
| Number of tagged fish recovered | 61 | 13 | 74 |
| Petersen estimate | 2020 | 1875 | 3895 |
| Upper 95% CL | 2583 | 3322 | 5905 |
| Lower 95% CL | 1578 | 1126 | 2705 |
| **French Creek** | | | |
| Number tagged | 103 | 76 | 179 |
| Number recovered | 18 | 41 | 59 |
| Number of tagged fish recovered | 8 | 5 | 13 |
| Petersen estimate | 220 | 539 | 759 |
| Upper 95% CL | 449 | 1244 | 1693 |
| Lower 95% CL | 118 | 255 | 372 |
| **Trent River** | | | |
| Number tagged (less strays from Trent) | 194 | 27 | 221 |
| Number recovered | 262 | 32 | 294 |
| Number of tagged fish recovered | 30 | 3 | 33 |
| Petersen estimate | 1654 | 231 | 1885 |
| Upper 95% CL | 2331 | 578 | 2909 |
| Lower 95% CL | 1140 | 94 | 1234 |

Table 6. Age, sex and length of live coho salmon recovered in Black Creek, French Creek and the Trent River, 1990.

| | | Fence recoveries | | | Upstream recoveries | | |
|---|---|---|---|---|---|---|---|
| System | Age and Sex | N | Mean (cm) | SD | N | Mean (cm) | SD |
| Black | Adult males | 352 | 47.5 | 7.2 | 22 | 47.4 | 7.5 |
| | Adult females | 449 | 51.6 | 7.3 | 70 | 52.6 | 3.8 |
| | Jacks | 575 | 28.6 | 2.8 | 40 | 23.8 | 3.0 |
| French | Adult males | 53 | 44.1 | 4.6 | 4 | 44.0 | 2.7 |
| | Adult females | 61 | 46.7 | 4.3 | 6 | 49.7 | 5.3 |
| | Jacks | 75 | 26.2 | 3.1 | 35 | 23.3 | 2.3 |
| Trent | Adult males | na | na | na | 91 | 47.6 | 6.2 |
| | Adult females | na | na | na | 110 | 49.8 | 5.8 |
| | Jacks | na | na | na | 27 | 28.7 | 1.9 |

na = not applicable

Table 7. Sex ratios and chi-squared tests of live coho recovered at Black Creek, French Creek, and Trent River, 1990.

| | Adult males only | | | | Adult males and jacks | | | |
|---|---|---|---|---|---|---|---|---|
| System | No. of adult males | No. of adult females | Ratio M/F | Chi Squared | No. of males | No. of adult females | Ratio M/F | Chi Squared |
| Black | 383 | 522 | 0.73 | 21.35 | 998 | 522 | 1.91 | 149.06 |
| French | 57 | 67 | 0.85 | 0.81 | 172 | 67 | 2.57 | 46.13 |
| Trent | 121 | 141 | 0.86 | 1.53 | 153 | 141 | 1.09 | 0.49 |

Note: critical value of chi squared = 3.84 (df = 1) in all cases.

Table 8. Freshwater age distribution of returning adult and jack coho at Black Creek, French Creek, and Trent River, 1990, as determined from scale pattern analysis.

| System | | Freshwater Age: Jacks 1 | Jacks 2 | Jacks Total | Adults 1 | Adults 2 | Adults Total | Total Aged | Total Resorbed | Total Sampled |
|---|---|---|---|---|---|---|---|---|---|---|
| Black | No. | 44 | 10 | 54 | 84 | 30 | 114 | 168 | 388 | 388 |
| | % | 81.5 | 18.5 | | 73.7 | 26.3 | | | | |
| French | No. | 22 | 10 | 32 | 37 | 3 | 40 | 72 | 222 | 222 |
| | % | 68.8 | 31.3 | | 92.5 | 7.5 | | | | |
| Trent | No. | 4 | 1 | 5 | 16 | 1 | 17 | 22 | 85 | 85 |
| | % | 80.0 | 20.0 | | 94.1 | 5.9 | | | | |

Table 9. Estimates of total escapement of adipose and secondary fin clipped adult and jack coho to Black Creek, French Creek and the Trent River, 1990.

| System | Age | Recovery location | Total No. of coho examined | No. of adipose clipped examined | adipose clipped | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | left ventral | | right ventral | | left maxillary | | right maxillary | | no secondary clip | |
| | | | | | No. | % | No. | % | No. | % | No. | % | No. | % |
| Black | Adult | Fence | 808 | 700 | 0 | 0.00 | 1 | 0.14 | 0 | 0.00 | 1 | 0.14 | 698 | 99.7 |
| | | Upstream* | 92 | 90 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 90 | 100 |
| | Jack | Fence | 579 | 551 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 551 | 100 |
| | | Upstream* | 40 | 35 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 35 | 100 |
| French | Adult | Fence | 114 | 102 | 0 | 0.00 | 4 | 3.92 | 1 | 0.98 | 6 | 5.88 | 91 | 89.2 |
| | | Upstream* | 10 | 8 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 8 | 100 |
| | Jack | Fence | 78 | 59 | 0 | 0.00 | 1 | 1.69 | 6 | 10.17 | 4 | 6.78 | 48 | 81.4 |
| | | Upstream* | 35 | 30 | 0 | 0.00 | 0 | 0.00 | 1 | 3.33 | 0 | 0.00 | 29 | 96.7 |
| Trent | Adult | Upstream* | 232 | 113 | 9 | 7.96 | 40 | 35.40 | 7 | 6.19 | 3 | 2.65 | 54 | 47.8 |
| | Jack | Upstream* | 29 | 7 | 4 | 57.14 | 1 | 14.29 | 0 | 0.00 | 0 | 0.00 | 2 | 28.6 |

* Recaptures are not included

Table 10. Fecundity estimates for French Creek coho broodstock females, 1990.

| | Length (cm) | Total weight of eggs (g) | No. of eggs | Scale Book | Scale No. | Age |
|---|---|---|---|---|---|---|
| | 45 | 274 | 1370 | | | |
| | 45 | 434 | 2170 | 15 | 4 | no age |
| | 46 | 283 | 1415 | | | |
| | 47 | 351 | 1755 | | | |
| | 50 | 294 | 1470 | | | |
| | 51 | 611 | 3055 | | | |
| | 52 | 564 | 2820 | 15 | 1 | 1 |
| | 54 | 435 | 2175 | | | |
| | 55 | 765 | 3825 | 15 | 3 | no age |
| | 56 | 495 | 2475 | | | |
| | 56 | 726 | 3630 | 15 | 2 | no age |
| | 60 | 830 | 4150 | | | |
| Mean | 51 | 505 | 2526 | | | |

Table 11. Estimates of total escapement of adipose clipped coho to Black Creek, French Creek, and Trent River, 1990.

| System | Age/sex | Sample size (A) | Adipose clips (B) | Mark rate (%) (C=B/Ax100 | Population estimate (a) (D) | Percent of population sampled E=A/Dx100) | Total estimated adipose clip (F=B/AxD) |
|---|---|---|---|---|---|---|---|
| Black | | | | | | | |
| | Male | 383 | 338 | 88.25 | 524 | 73.16 | 462 |
| | Female | 522 | 452 | 86.59 | 713 | 73.16 | 618 |
| | Jack | 615 | 582 | 94.63 | 1328 | 46.31 | 1257 |
| | Total | 1520 | 1372 | 90.26 | 2565 | 59.26 | 2315 (b) |
| French | | | | | | | |
| | Male | 57 | 50 | 87.72 | 105 | 54.29 | 92 |
| | Female | 67 | 61 | 91.04 | 123 | 54.47 | 112 |
| | Jack | 115 | 89 | 77.39 | 365 | 31.51 | 282 |
| | Total | 239 | 200 | 83.68 | 593 | 40.30 | 496 (b) |
| Trent | | | | | | | |
| | Male | 121 | 51 | 42.15 | 332 | 36.45 | 140 |
| | Female | 141 | 62 | 43.97 | 386 | 36.53 | 170 |
| | Jack | 32 | 7 | 21.88 | 76 | 42.11 | 17 |
| | Total | 294 | 120 | 40.82 | 794 | 37.03 | 324 (b) |

(a) Population estimates for Black Creek and French Creek are results from the open population model (Table 4) and the population estimates for Trent River are results from the Baysian model (Table 5). Male and female estimates are derived using sex ratios at the fence.

(b) Values are calculated, not the summation of individual totals.

Table 12. Contribution of 1989 and 1990 coho smolt outmigrations, by tagging period during outmigration, to the 1990 escapement to Black Creek.

| Smolt year | CWT code | Tagging period | Size at release (mm) | Observed adipose clips | | | Estimated adipose clips | | | No. Smolts | | Contribution to escapement | | | Smolt to returning jack (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M | F | T | M | F | T | Clipped | Unclipped | M | F | T | |
| 1990 | 82650, 82653 | Apr 13 - Apr 30 | <120 | 5 | 0 | 5 | 62.2 | 0.0 | 62.2 | 3010 | 6 | 62 | 0 | 62 | 2.07 |
| | 82703, 82721, 82652, 81607 | May 1 - May 10 | <120 | 24 | 0 | 24 | 298.7 | 0.0 | 298.7 | 28209 | 58 | 299 | 0 | 299 | 1.06 |
| | 82726, 25136, 82725 | May 11 - May 15 | <120 | 4 | 0 | 4 | 49.8 | 0.0 | 49.8 | 25570 | 71 | 50 | 0 | 50 | 0.19 |
| | 81608 | May 16 - May 19 | <120 | 1 | 0 | 1 | 12.4 | 0.0 | 12.4 | 19391 | 52 | 12 | 0 | 12 | 0.06 |
| | 20841, 82658 | May 20 - Jun 2 | <120 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 11038 | 49 | 0 | 0 | 0 | 0.00 |
| | 82709 | Jun 3 - Jun 20 | <120 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 3389 | 11 | 0 | 0 | 0 | 0.00 |
| | | Total | | 34 | 0 | 34 | 423.1 | 0 | 423.1 | 90607 | 247 | 424 | 0 | 424 | 0.47 |
| | 82708, 82724 | Apr 13 - Apr 30 | >120 | 40 | 0 | 40 | 497.8 | 0.0 | 497.8 | 10743 | 43 | 500 | 0 | 500 | 4.63 |
| | 82720, 82704 | May 1 - May 10 | >120 | 26 | 0 | 26 | 323.6 | 0.0 | 323.6 | 12269 | 31 | 324 | 0 | 324 | 2.64 |
| | 82722 | May 11 - May 15 | >120 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 2957 | 8 | 0 | 0 | 0 | 0.00 |
| | 82711 | May 16 - May 19 | >120 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 777 | 1 | 0 | 0 | 0 | 0.00 |
| | 82712 | May 20 - Jun 2 | >120 | 1 | 0 | 1 | 12.4 | 0.0 | 12.4 | 806 | 5 | 13 | 0 | 13 | 1.54 |
| | 82654 | Jun 3 - Jun 20 | >120 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 223 | 3 | 0 | 0 | 0 | 0.00 |
| | | Total | | 67 | 0 | 67 | 833.9 | 0 | 833.9 | 27775 | 91 | 837 | 0 | 837 | 3.00 |
| | Total decoded | | | 101 | 0 | 101 | 1257 | 0 | 1257 | 118382 | 338 | 1261 | 0 | 1261 | 1.06 |
| | Strays | | | 0 | 0 | 0 | | | | | | | | | |
| | No head | | | 479 | 0 | 479 | | | | | | | | | |
| | No data | | | 0 | 0 | 0 | | | | | | | | | |
| | No pin | | | 2 | 0 | 2 | | | | | | | | | |
| | Lost pin | | | 0 | 0 | 0 | | | | | | | | | |
| | Total observed | | | 582 | 0 | 582 | | | | | | | | | |

Table 12 (cont). Contribution of 1989 and 1990 coho smolt outmigrations, by tagging period during outmigration, to the 1990 escapement to Black Creek.

| Smolt year | CWT code | Tagging period | Size at release (mm) | Observed adipose clips | | | Estimated adipose clips | | | No. Smolts | | Contribution to escapement | | | Smolt to returning adult (a) (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M | F | T | M | F | T | Clipped | Unclipped | M | F | T | |
| 1989 | 82615 | Apr 13 - Apr 19 | <120 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 11 | 0 | 0 | 0 | 0 | 0.00 |
| | 82645 | Apr 20 - Apr 30 | <120 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 731 | 3 | 0 | 0 | 0 | 0.00 |
| | 82514 | May 1 - May 10 | <120 | 0 | 3 | 3 | 0.0 | 77.3 | 77.3 | 2138 | 10 | 0 | 78 | 78 | 3.61 |
| | 82631 | May 11 - May 15 | <120 | 0 | 2 | 2 | 0.0 | 51.5 | 51.5 | 2865 | 10 | 0 | 52 | 52 | 1.80 |
| | 81611 | May 16 - May 19 | <120 | 0 | 5 | 5 | 0.0 | 128.8 | 128.8 | 1506 | 36 | 0 | 132 | 132 | 8.55 |
| | 81610 | May 20 - Jun 2 | <120 | 3 | 10 | 13 | 198.0 | 257.5 | 455.5 | 10940 | 77 | 199 | 259 | 459 | 4.16 |
| | 81606 | Jun 3 - Jun 23 | <120 | 1 | 2 | 3 | 66.0 | 51.5 | 117.5 | 1384 | 49 | 68 | 53 | 122 | 8.49 |
| | | Total | | 4 | 22 | 26 | 264 | 566.5 | 830.5 | 19575 | 185 | 268 | 574 | 841 | 4.26 |
| | 82646 | Apr 13 - Apr 19 | >120 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 161 | 0 | 0 | 0 | 0 | 0.00 |
| | 82516 | Apr 20 - Apr 30 | >120 | 1 | 0 | 1 | 66.0 | 0.0 | 66.0 | 2798 | 10 | 66 | 0 | 66 | 2.36 |
| | 81609 | May 1 - May 10 | >120 | 1 | 0 | 1 | 66.0 | 0.0 | 66.0 | 3184 | 14 | 66 | 0 | 66 | 2.07 |
| | 82639 | May 11 - May 15 | >120 | 0 | 1 | 1 | 0.0 | 25.8 | 25.8 | 805 | 3 | 0 | 26 | 26 | 3.20 |
| | 82617 | May 16 - May 19 | >120 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 453 | 12 | 0 | 0 | 0 | 0.00 |
| | 82618 | May 20 - Jun 2 | >120 | 1 | 0 | 1 | 66.0 | 0.0 | 66.0 | 1896 | 10 | 66 | 0 | 66 | 3.48 |
| | 82620 | May 20 - Jun 2 | >120 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 366 | 6 | 0 | 0 | 0 | 0.00 |
| | 82638 | Jun 3 - Jun 23 | >120 | 0 | 1 | 1 | 0.0 | 25.8 | 25.8 | 238 | 10 | 0 | 27 | 27 | 10.82 |
| | | Total | | 3 | 2 | 5 | 198 | 51.5 | 249.5 | 9901 | 65 | 199 | 53 | 252 | 2.52 |
| | Total decoded | | | 7 | 24 | 31 | 462 | 618 | 1080 | 29476 | 250 | 467 | 626 | 1093 | 3.68 |
| | Strays | | | 0 | 0 | 0 | | | | | | | | | |
| | No head | | | 331 | 425 | 756 | | | | | | | | | |
| | No data | | | 0 | 0 | 0 | | | | | | | | | |
| | No pin | | | 0 | 3 | 3 | | | | | | | | | |
| | Lost pin | | | 0 | 0 | 0 | | | | | | | | | |
| | Total observed | | | 338 | 452 | 790 | | | | | | | | | |

(a) male and female combined

Table 13. Contribution of 1989 and 1990 coho smolt outmigrations, by tagging period during outmigration, to the 1990 escapement to French Creek.

| Smolt year | CWT code | Tagging period | Observed adipose clips | | | Estimated adipose clips | | | No. Smolts | | Contribution to escapement | | | Smolt to returning jack/adult |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | M | F | T | M | F | T | Clipped | Unclipped | M | F | T | (%) |
| 1990 | 82655 | Apr 15 - May 10 | 1 | 0 | 1 | 141.0 | 0.0 | 141.0 | 1313 | 12 | 142 | 0 | 142 | 10.74 |
| | 82723, 82660 | May 11 - May 19 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 11473 | 76 | 0 | 0 | 0 | 0.00 |
| | 2840, 82713, 82714 | May 20 - Jun 3 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 20333 | 38 | 0 | 0 | 0 | 0.00 |
| | 82661, 82651 | Jun 3 - Jun 18 | 1 | 0 | 1 | 141.0 | 0.0 | 141.0 | 5179 | 71 | 143 | 0 | 143 | 2.72 |
| | 82656 (b) | Apr 17 - May 19 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 884 | 9 | 0 | 0 | 0 | 0.00 |
| | 82657 (b) | May 20 - Jun 18 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 1473 | 3 | 0 | 0 | 0 | 0.00 |
| | Total decoded | | 2 | 0 | 2 | 282 | 0 | 282 | 40655 | 209 | 285 | 0 | 285 | 0.70 |
| | Strays | | 0 | 0 | 0 | | | | | | | | | |
| | No head | | 87 | 0 | 87 | | | | | | | | | |
| | No data | | 0 | 0 | 0 | | | | | | | | | |
| | No pin | | 0 | 0 | 0 | | | | | | | | | |
| | Lost pin | | 0 | 0 | 0 | | | | | | | | | |
| | Total observed | | 89 | 0 | 89 | | | | | | | | | |
| 1989 | 82643 | Apr 17 - May 10 | 1 | 2 | 3 | 8.4 | 13.2 | 21.5 | 1754 | 19 | 8 | 13 | 22 | 1.23 |
| | 82511 | May 11 - May 19 | 4 | 7 | 11 | 33.5 | 46.1 | 79.6 | 3989 | 38 | 34 | 47 | 80 | 1.99 |
| | 82513 | May 20 - Jun 2 | 4 | 6 | 10 | 33.5 | 39.5 | 73.0 | 5244 | 13 | 34 | 40 | 73 | 1.39 |
| | 82644 | Jun3 - Jun 17 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 449 | 4 | 0 | 0 | 0 | 0.00 |
| | 82642(b) | Apr 17 - Jun 17 | 2 | 1 | 3 | 16.7 | 6.6 | 23.3 | 747 | 8 | 17 | 7 | 24 | 3.12 |
| | Total decoded | | 11 | 16 | 27 | 92 | 112 | 204 | 12183 | 82 | 93 | 106 | 199 | 1.62 |
| | Strays | | 0 | 1 | 1 | | | | | | | | | |
| | No head | | 37 | 43 | 80 | | | | | | | | | |
| | No data | | 0 | 0 | 0 | | | | | | | | | |
| | No pin | | 2 | 1 | 3 | | | | | | | | | |
| | Lost pin | | 0 | 0 | 0 | | | | | | | | | |
| | Total observed | | 50 | 61 | 111 | | | | | | | | | |

(a) male and female combined
(b) hatchery outplants

Table 14. Contribution of 1989 and 1990 coho smolt outmigrations, by tagging period during outmigration, to the 1990 escapement to the Trent River.

| Smolt year | CWT code | Tagging period | Observed adipose clips | | | Estimated adipose clips | | | No. Smolts | | Contribution to escapement | | | Smolt to returning Jack/Adult (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | M | F | T | M | F | T | Clipped | Unclipped | M | F | T | |
| 1990 | 82662 | Apr 27 - May 23 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 3385 | 85 | 0 | 0 | 0 | 0.00 |
| | 82663 | May 24 - Jun 2 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 1944 | 15 | 0 | 0 | 0 | 0.00 |
| | 82705 (b) | Apr 27 - May 25 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 3561 | 6 | 0 | 0 | 0 | 0.00 |
| | 82706 (b) | May 26 - Jun 2 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 1549 | 24 | 0 | 0 | 0 | 0.00 |
| | Total decoded | | 0 | 0 | 0 | 17* | 0 | 17* | 10439 | 130 | 0 | 0 | 0 | 0.00 |
| | Strays | | 0 | 0 | 0 | | | | | | | | | |
| | No head | | 7 | 0 | 7 | | | | | | | | | |
| | No data | | 0 | 0 | 0 | | | | | | | | | |
| | No pin | | 0 | 0 | 0 | | | | | | | | | |
| | Lost pin | | 0 | 0 | 0 | | | | | | | | | |
| | Total observed | | 7 | 0 | 7 | | | | | | | | | |
| 1989 | 82505 | Apr 30 - May 24 | 1 | 2 | 3 | 28.0 | 28.3 | 56.3 | 1555 | 25 | 28 | 29 | 57 | 3.62 |
| | 82641 | May 25 - Jun 17 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 1906 | 35 | 0 | 0 | 0 | 0.00 |
| | 82640, 82623 (b) | Apr 30 - May 24 | 3 | 9 | 12 | 84.0 | 127.5 | 211.5 | 5719 | 85 | 85 | 129 | 215 | 3.70 |
| | 82507 (b) | May 25 - Jun 17 | 1 | 1 | 2 | 28.0 | 14.2 | 42.2 | 3141 | 57 | 29 | 14 | 43 | 1.34 |
| | Total decoded | | 5 | 12 | 17 | 140 | 170 | 310 | 12321 | 202 | 142 | 173 | 315 | 2.51 |
| | Strays | | 0 | 0 | 0 | | | | | | | | | |
| | No head | | 46 | 50 | 96 | | | | | | | | | |
| | No data | | 0 | 0 | 0 | | | | | | | | | |
| | No pin | | 0 | 0 | 0 | | | | | | | | | |
| | Lost pin | | 0 | 0 | 0 | | | | | | | | | |
| | Total observed | | 51 | 62 | 113 | | | | | | | | | |

(a) male and female combined

(b) hatchery outplants

* Estimated adipose clips from Table 11.

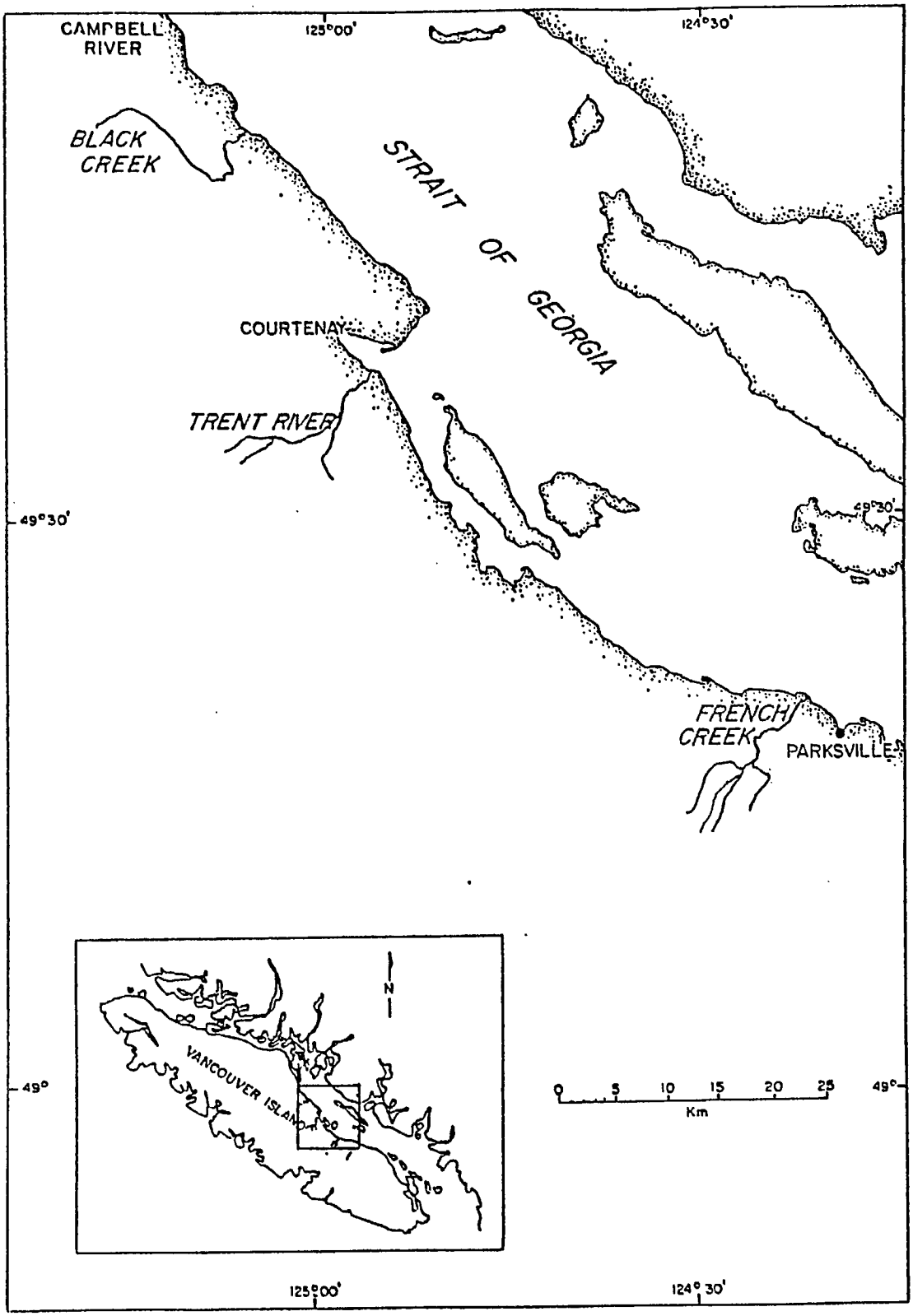



Figure 1. Map of study area.

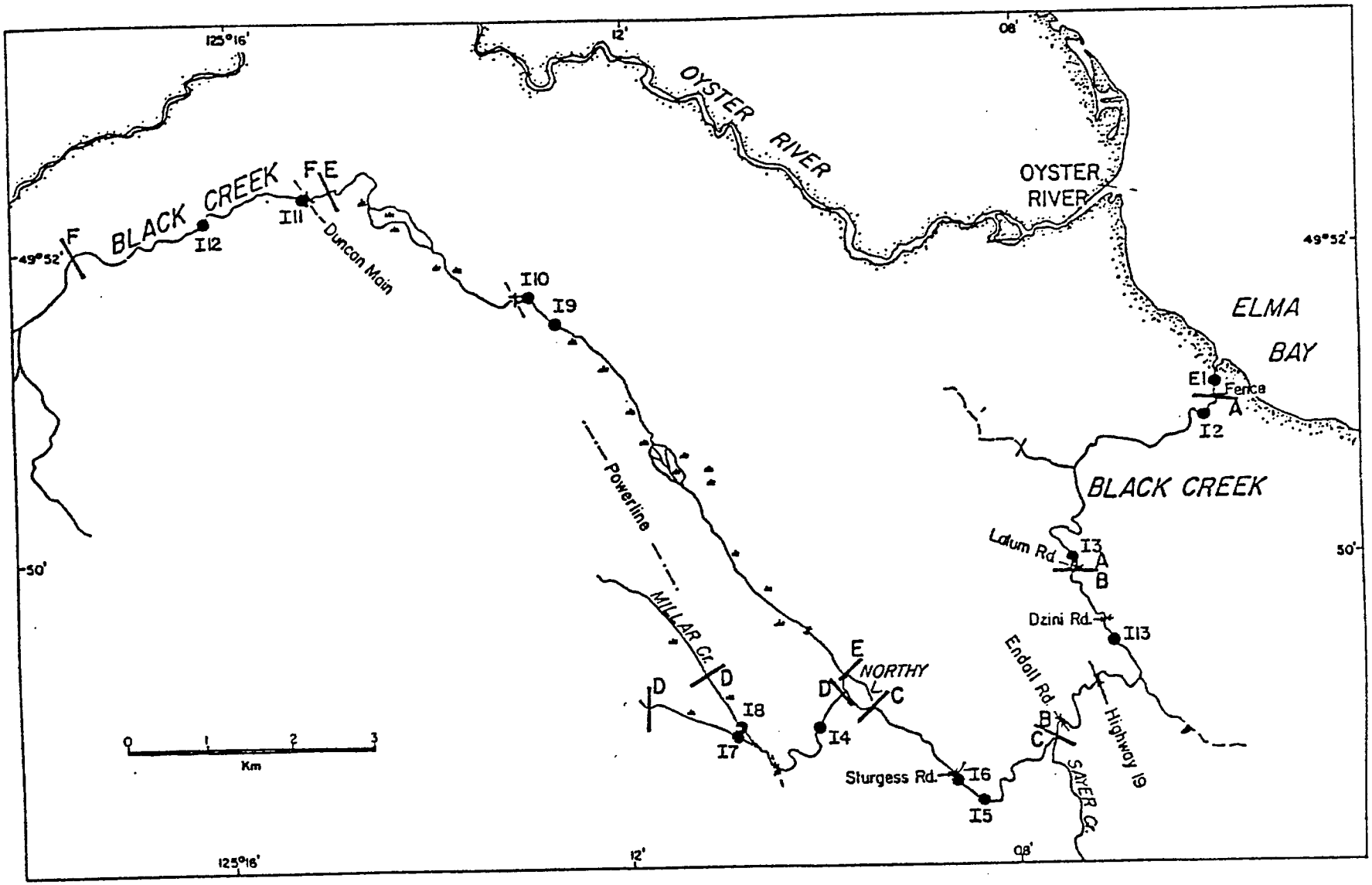



Figure 2. Map of Black Creek showing location of recovery strata (A-F), index sites (I2-I13), and the counting fence used to capture adult salmon

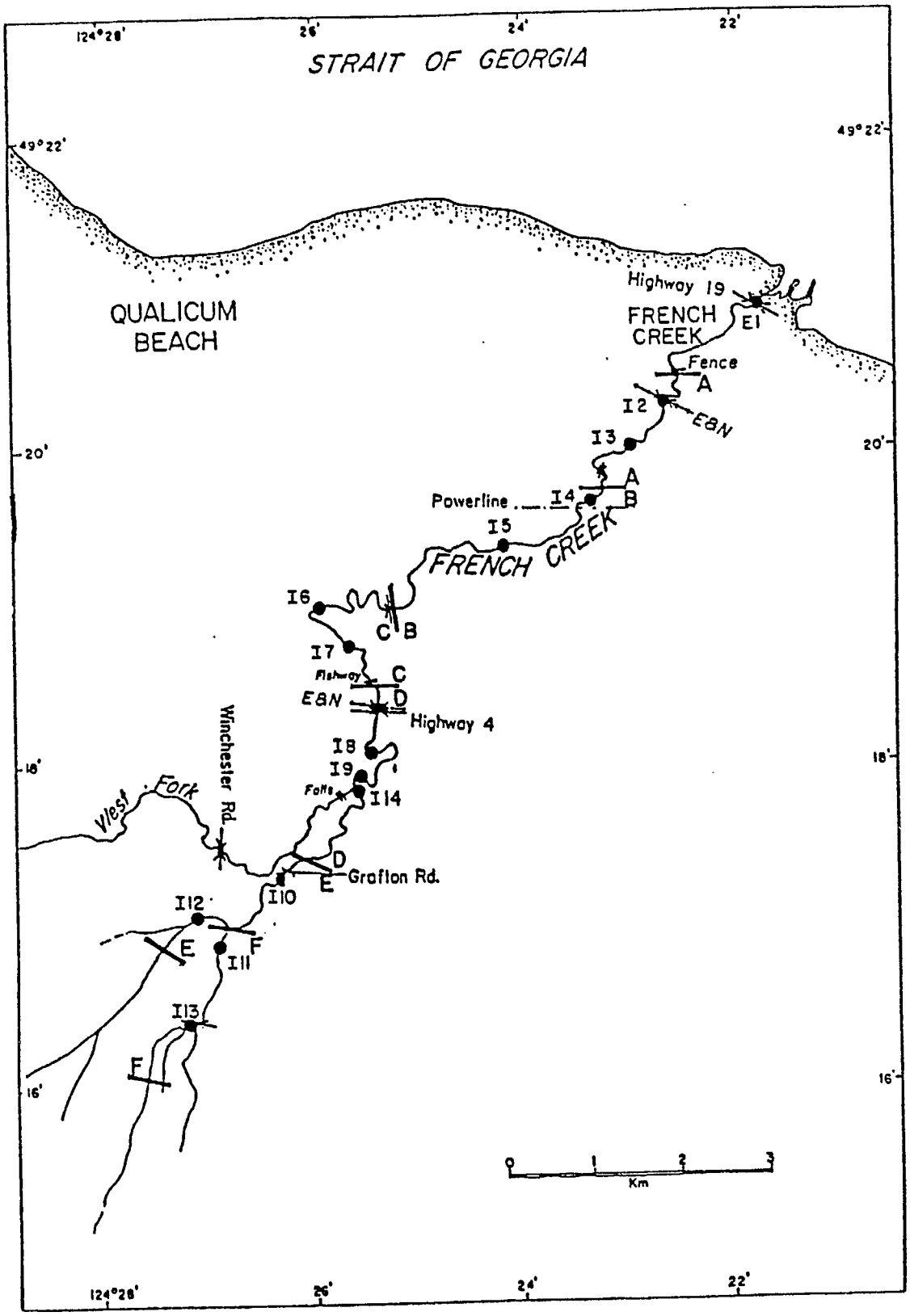



Figure 3. Map of French Creek showing location of recovery strata (A-F), index sites (I2-I14) and the counting fence used to capture adult salmon

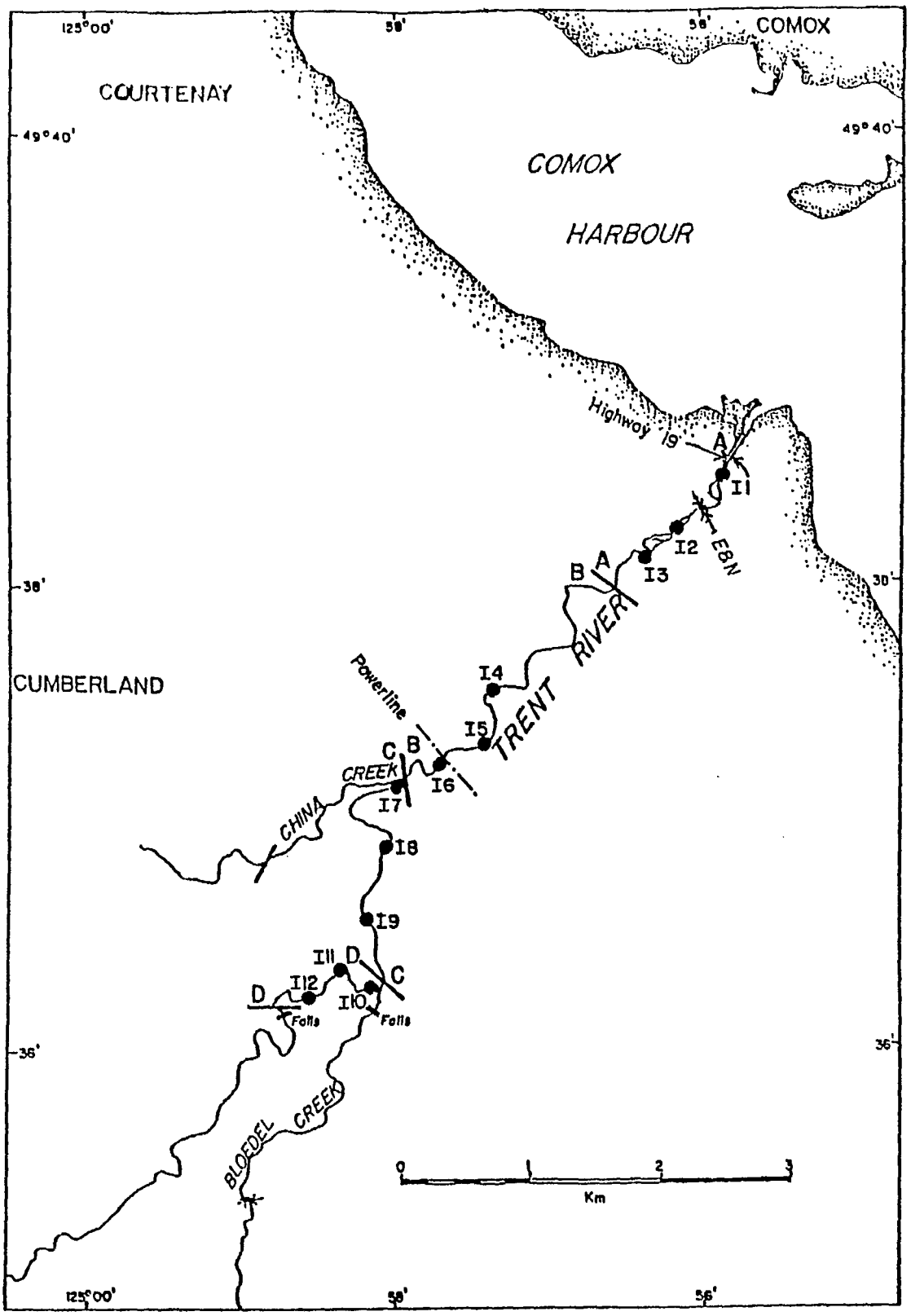



Figure 4. Map of Trent River showing location of recovery strata (A-D), and index sites (I1-I12)

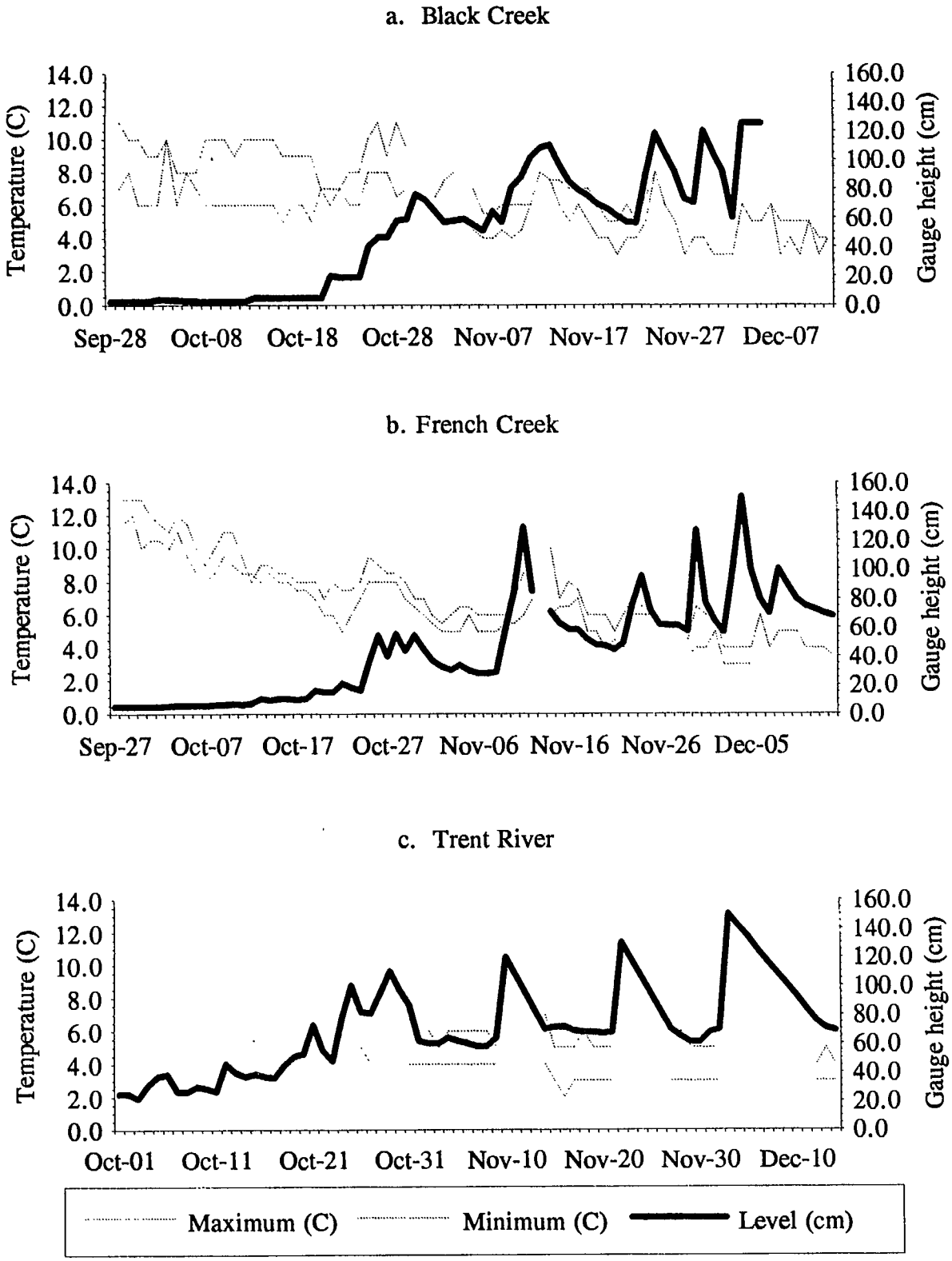



Figure 5. Daily water levels and temperatures for Black Creek, French Creek, and Trent River, 1990.

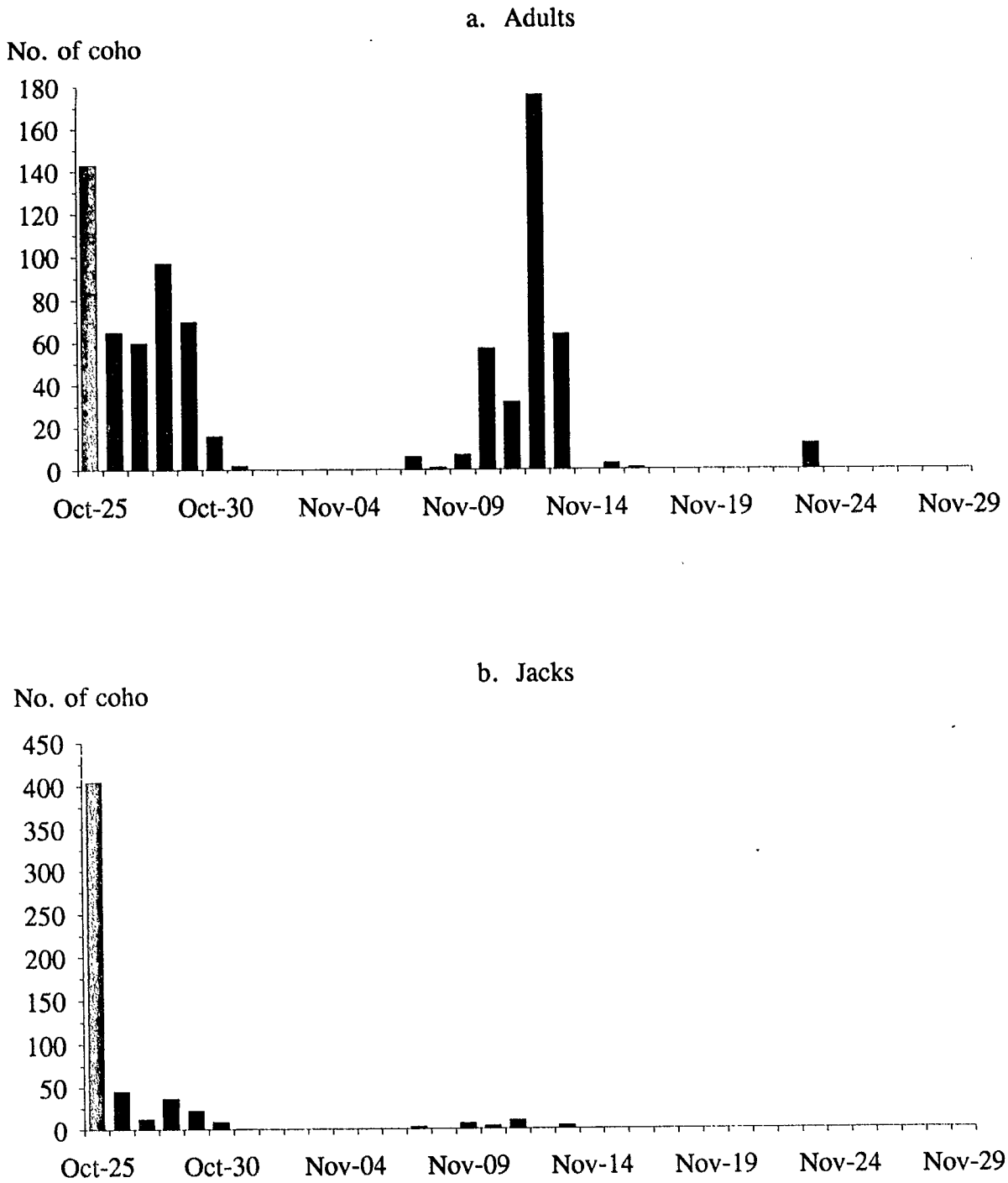



Figure 6. Daily fence counts of coho salmon at Black Creek, October to November, 1990.

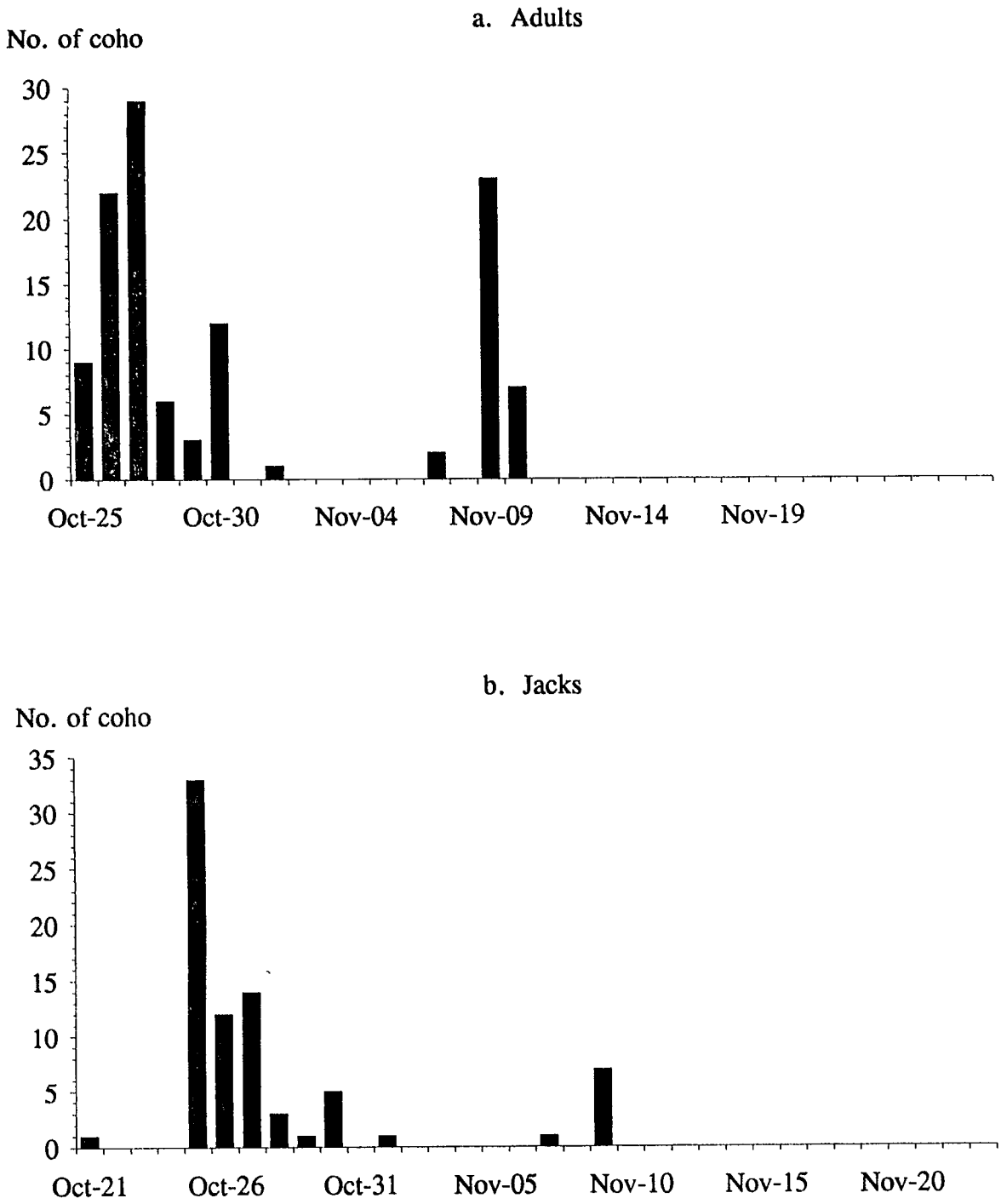
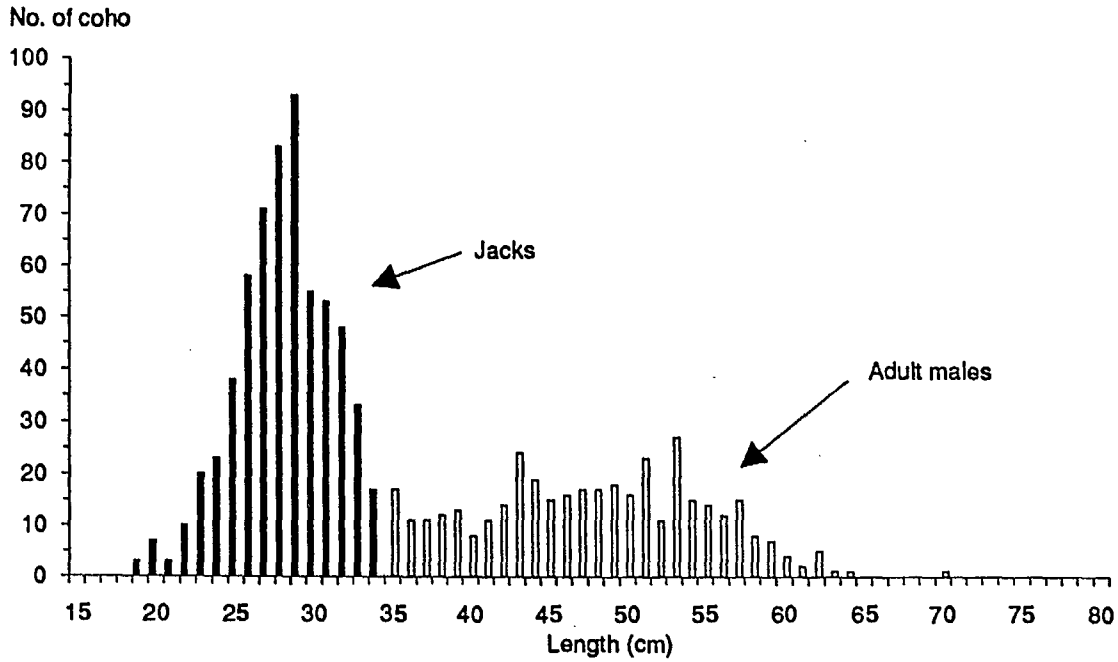



Figure 7. Daily fence counts of coho salmon at French Creek, October to November, 1990.

a. Jacks and adult males




b. Females

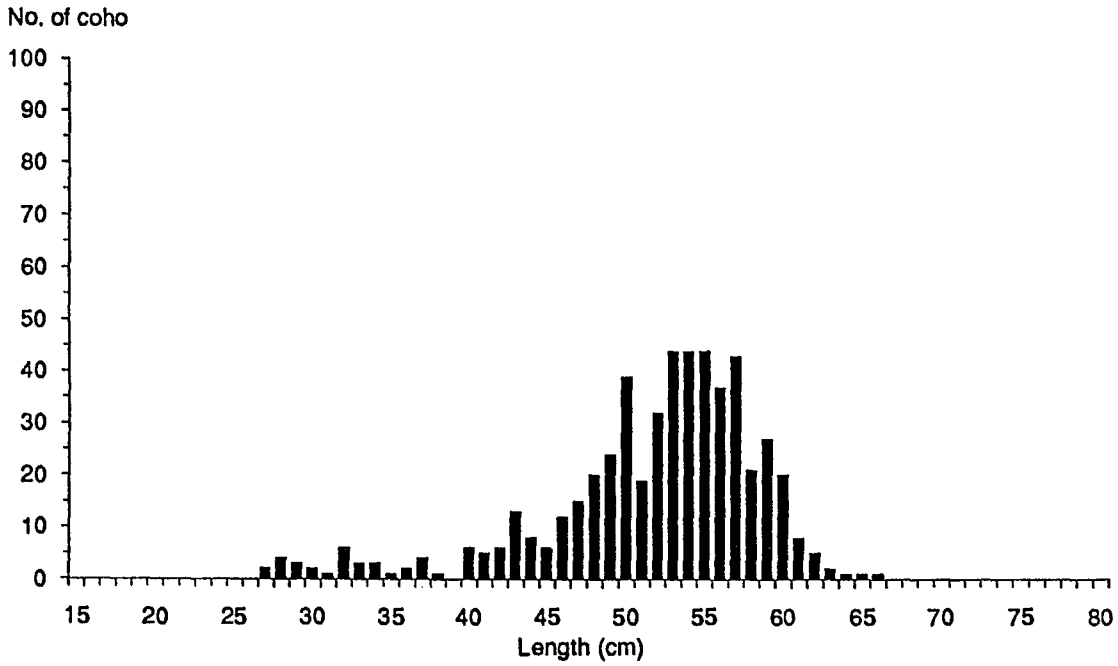
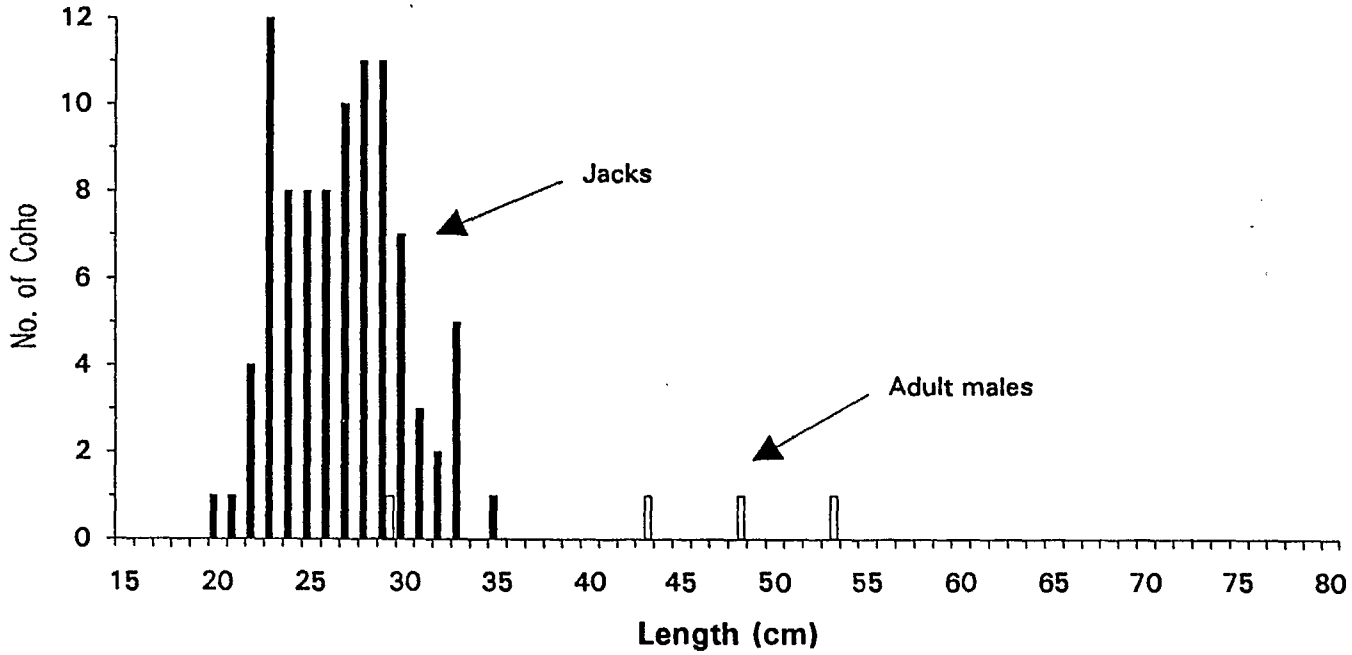



Figure 8. Length frequency histograms for live coho salmon at Black Creek, October-December, 1990.

a. Jacks and adult males




b. Females

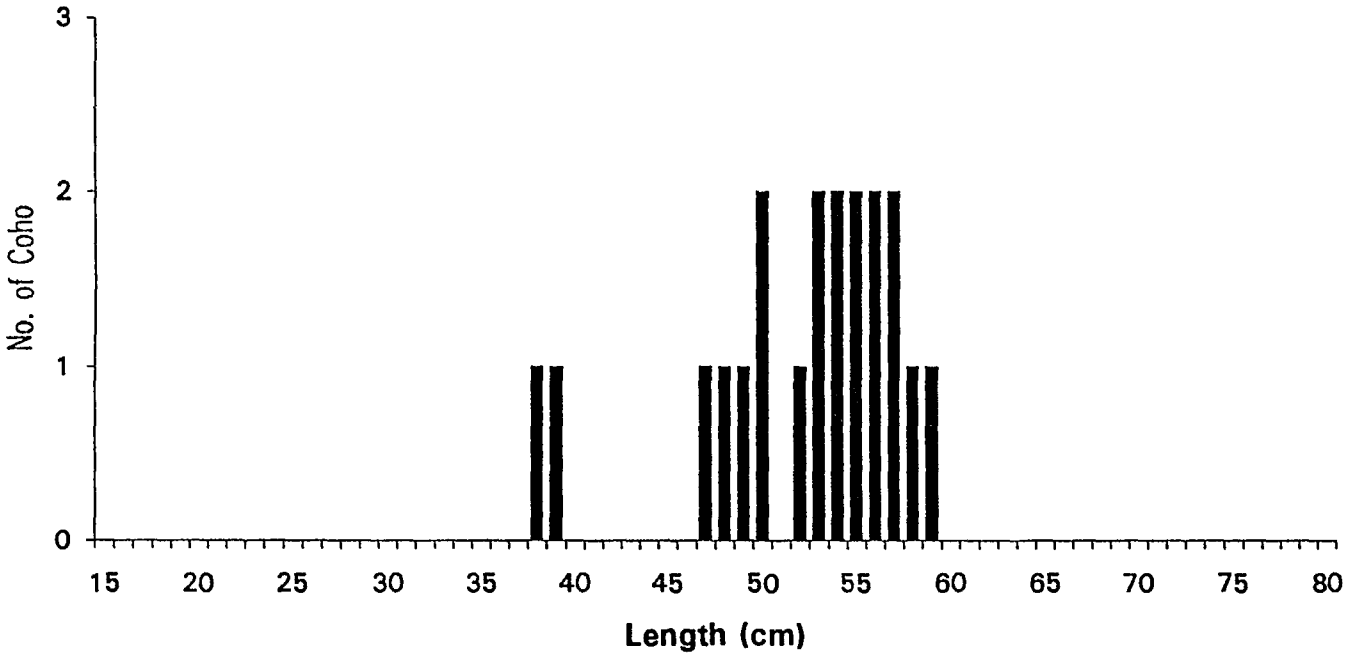



Figure 9. Length frequency histograms for coho salmon at Black Creek, October- December, 1990. Only data for coho with decoded CWT's.

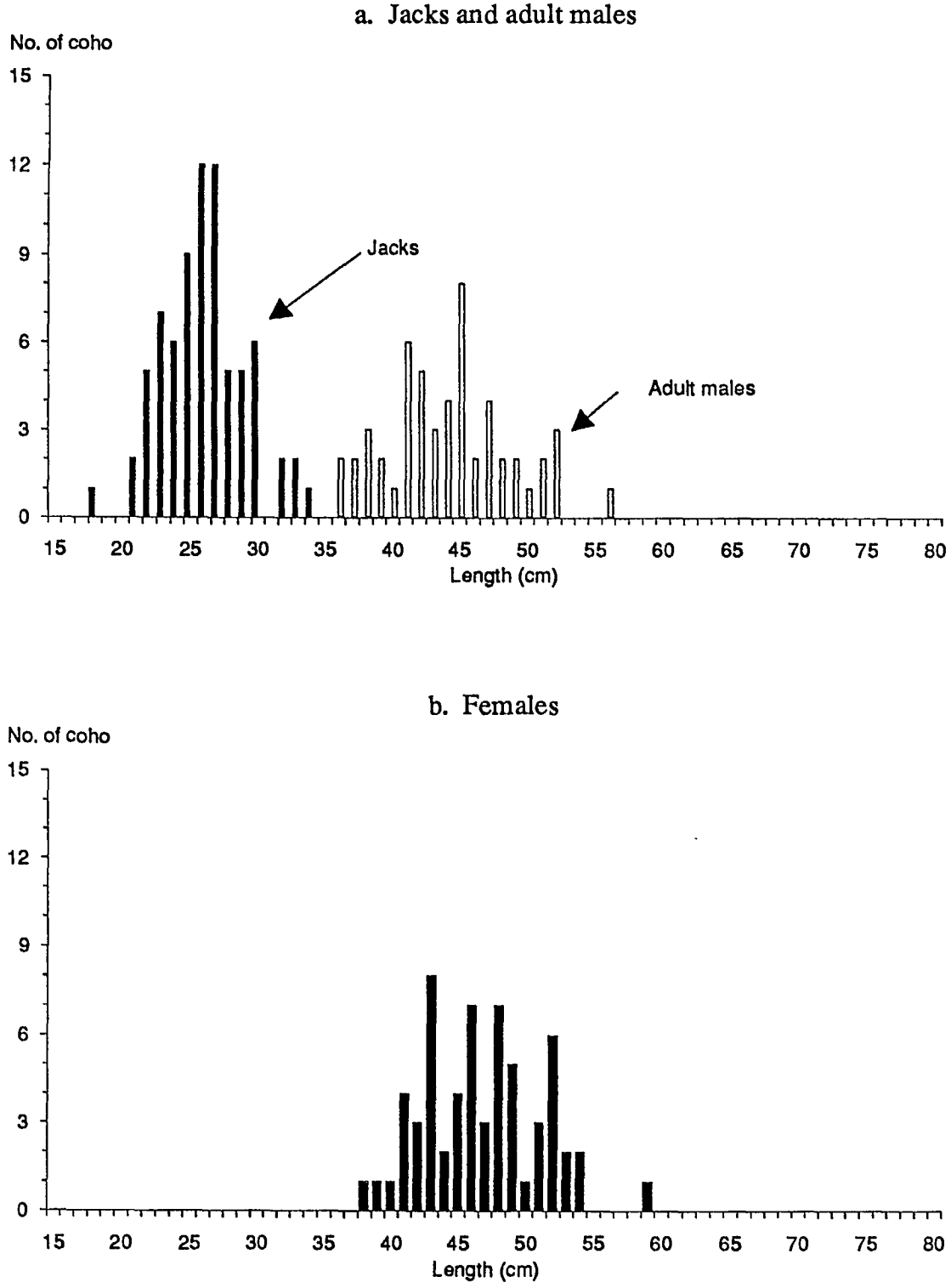



Figure 10. Length frequency histograms for live coho salmon at French Creek, October-December, 1990.

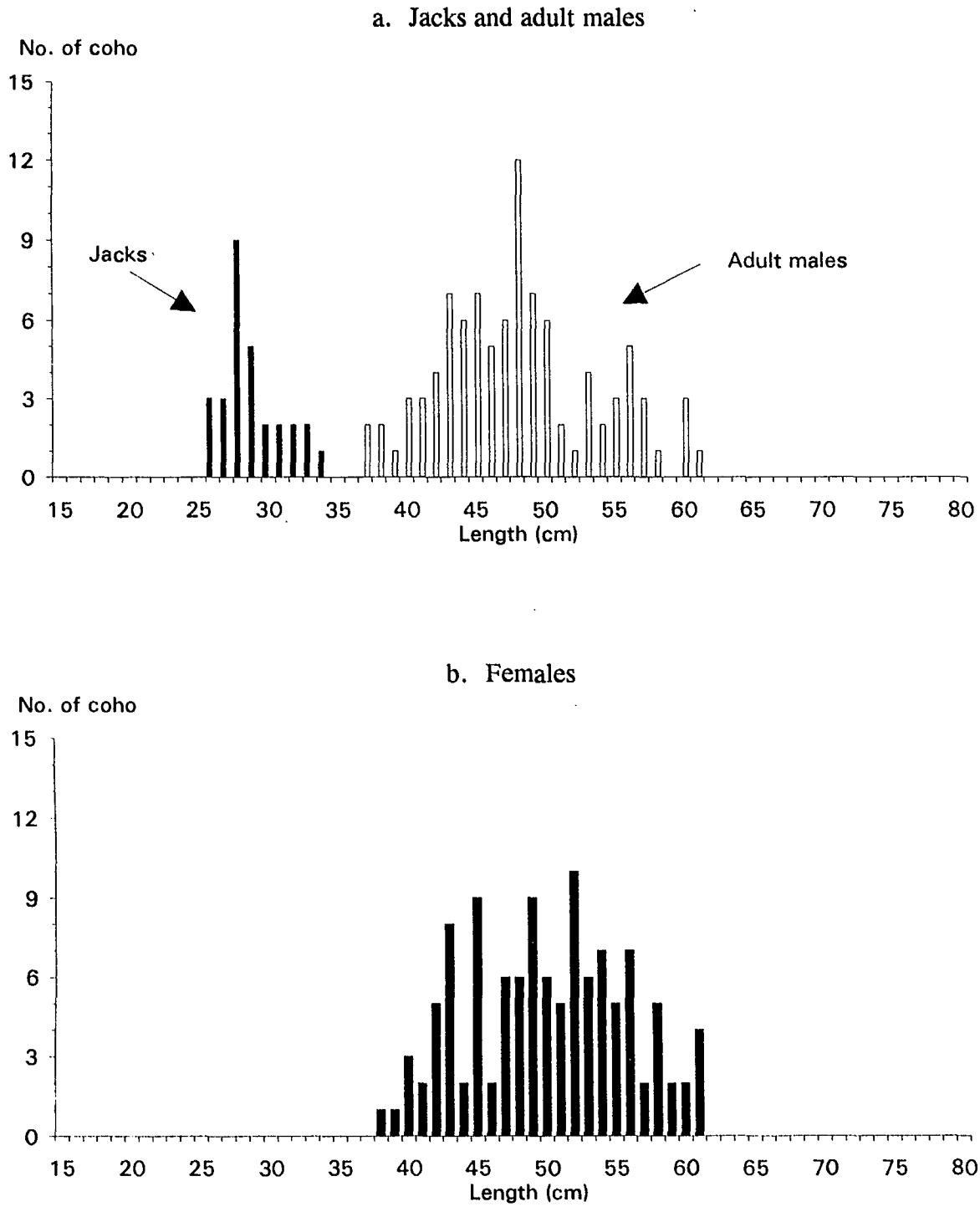



Figure 11. Length frequency histograms for live coho salmon at Trent River, October to November, 1990.

# APPENDIX A

Physical data for Black Creek, French Creek
and the Trent River, October to December, 1990.

Appendix A. Physical data for Black Creek, French Creek and theTrent River, October to December, 1990.

| Stream | Date | Time | Temperature | | | Water level | | Weather | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Maximum (C) | Minimum (C) | Present (C) | Guage 1 (cm) | Guage 2 (cm) | Rain | Wind dir. | Wind spd. (km) | % cloud cover | |
| Black | Sep-28 | 800 | - | - | - | 40.0 | 2.5 | 0 | - | 0 | 90 | no temps |
| Black | Sep-29 | 1000 | 11.0 | 7.0 | 7.0 | 40.0 | 2.5 | 0 | - | 0 | 40 | |
| Black | Sep-30 | 1000 | 10.0 | 8.0 | 8.0 | 40.0 | 2.5 | 0 | NE | 16 | 50 | |
| Black | Oct-01 | 1000 | 10.0 | 6.0 | 7.0 | 40.0 | 2.5 | 1 | - | 0 | 90 | |
| Black | Oct-02 | 1000 | 9.0 | 6.0 | 8.0 | 40.0 | 2.5 | 0 | NE | 32 | 60 | |
| Black | Oct-03 | 1000 | 9.0 | 6.0 | 9.0 | 42.5 | 3.8 | 3 | - | 0 | 100 | |
| Black | Oct-04 | 1000 | 10.0 | 10.0 | 10.0 | 42.5 | 3.8 | 1 | - | 0 | 100 | |
| Black | Oct-05 | 1000 | 8.0 | 6.0 | 6.0 | 42.5 | 3.5 | 0 | - | 0 | 40 | |
| Black | Oct-06 | 1000 | 8.0 | 8.0 | 8.0 | 41.0 | 3.0 | 0 | - | 0 | 70 | |
| Black | Oct-07 | 1000 | 8.0 | 7.0 | 7.0 | 41.0 | 3.0 | 0 | - | 0 | 90 | |
| Black | Oct-08 | 1000 | 10.0 | 6.0 | 6.0 | 40.0 | 2.5 | 0 | SE | 16 | 100 | |
| Black | Oct-09 | 1000 | 10.0 | 6.0 | 8.0 | 40.0 | 2.5 | 1 | SE | 24 | 100 | |
| Black | Oct-10 | 1000 | 10.0 | 6.0 | 7.0 | 40.0 | 2.5 | 0 | NE | 16 | 5 | |
| Black | Oct-11 | 1000 | 9.0 | 6.0 | 6.0 | 40.0 | 2.5 | 1 | SE | 32 | 100 | |
| Black | Oct-12 | 1000 | 10.0 | 6.0 | 6.0 | 40.0 | 2.5 | 0 | - | 0 | 30 | heavy rain @ night |
| Black | Oct-13 | 1000 | 10.0 | 6.0 | 6.0 | 40.0 | 5.0 | 1 | SE | 16 | 100 | |
| Black | Oct-14 | 1000 | 10.0 | 6.0 | 6.0 | 40.0 | 5.0 | 3 | SE | 24 | 100 | |
| Black | Oct-15 | 1000 | 10.0 | 6.0 | 6.0 | 40.0 | 5.0 | 0 | - | 0 | 90 | |
| Black | Oct-16 | 1000 | 9.0 | 5.0 | 5.0 | 40.0 | 5.0 | 0 | NE | 8 | 10 | |
| Black | Oct-17 | 1000 | 9.0 | 6.0 | 6.0 | 40.0 | 5.0 | 2 | SE | 32 | 100 | |
| Black | Oct-18 | 1000 | 9.0 | 6.0 | 6.0 | 40.0 | 5.0 | 0 | - | 0 | 50 | |
| Black | Oct-19 | 1000 | 9.0 | 5.0 | 5.0 | 40.0 | 5.0 | 0 | - | 0 | 30 | |
| Black | Oct-20 | 1000 | 7.0 | 7.0 | 7.0 | 40.0 | 5.0 | 1 | - | 0 | 100 | |
| Black | Oct-21 | 1000 | 7.0 | 6.0 | 6.0 | 50.0 | 20.0 | 0 | - | 0 | 10 | |
| Black | Oct-22 | 900 | 7.0 | 7.0 | 7.0 | 48.8 | 18.8 | 0 | - | 0 | 70 | |
| Black | Oct-23 | 800 | 8.0 | 6.0 | 6.0 | 48.8 | 18.8 | 1 | SE | 8 | 100 | |
| Black | Oct-24 | 900 | 8.0 | 6.0 | 6.0 | 48.8 | 18.8 | 3 | SE | 16 | 100 | |
| Black | Oct-25 | 800 | 10.0 | 8.0 | 8.0 | 67.5 | 40.0 | 1 | - | 0 | 95 | |
| Black | Oct-26 | 800 | 11.0 | 8.0 | 8.0 | 74.0 | 46.5 | 0 | - | 0 | 40 | |
| Black | Oct-27 | 800 | 9.0 | 8.0 | 8.0 | 73.0 | 46.5 | 0 | - | 0 | 100 | |

Appendix A. Physical data for Black Creek, French Creek and theTrent River, October to December, 1990.

| Stream | Date | Time | Temperature | | | Water level | | Weather | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Maximum (C) | Minimum (C) | Present (C) | Guage 1 (cm) | Guage 2 (cm) | Rain | Wind dir. | Wind spd. (km) | % cloud cover | |
| Black | Oct-28 | 800 | 11.0 | 6.5 | 8.5 | 83.0 | 58.0 | 0 | - | 0 | 100 | jack panels on/off |
| Black | Oct-29 | 800 | 9.5 | 7.0 | 7.0 | 84.0 | 59.0 | 1 | SE | 8 | 100 | |
| Black | Oct-30 | 800 | - | - | - | 96.0 | 76.0 | 0 | - | 0 | 30 | no temps |
| Black | Oct-31 | 900 | - | - | - | 93.0 | 72.0 | 0 | - | 0 | 20 | no temps |
| Black | Nov-01 | 900 | 6.5 | - | 4.5 | 89.0 | 64.0 | 0 | - | 0 | 5 | |
| Black | Nov-02 | 900 | 7.5 | - | 5.0 | 82.0 | 57.0 | 3 | - | 0 | 100 | |
| Black | Nov-03 | 900 | 8.0 | - | 5.5 | 83.0 | 58.0 | 1 | SE | 8 | 100 | |
| Black | Nov-04 | 900 | - | - | 6.0 | 84.0 | 59.0 | 0 | - | 0 | 65 | |
| Black | Nov-05 | 900 | 7.0 | 4.5 | 4.5 | 80.0 | 55.0 | 0 | - | 0 | 30 | |
| Black | Nov-06 | 830 | 5.5 | 4.0 | 4.0 | 75.0 | 51.0 | 0 | - | 0 | 100 | |
| Black | Nov-07 | 800 | 5.5 | 4.0 | 4.0 | 89.0 | 64.0 | 1 | - | 0 | 100 | |
| Black | Nov-08 | 900 | 6.0 | 4.5 | 4.5 | 82.0 | 57.0 | 0 | - | 0 | 100 | |
| Black | Nov-09 | 800 | 6.0 | 4.0 | 4.0 | 102.0 | 81.0 | 1 | - | 0 | 100 | |
| Black | Nov-10 | 800 | 6.0 | 4.5 | 4.5 | 105.0 | 88.0 | 3 | - | 0 | 100 | |
| Black | Nov-11 | 800 | 6.0 | 6.0 | 6.0 | 113.8 | 101.3 | 0 | S | 0 | 100 | |
| Black | Nov-12 | 800 | 8.0 | 8.0 | 8.0 | 120.0 | 108.0 | 0 | S | 8 | 100 | |
| Black | Nov-13 | 800 | 7.5 | 7.5 | 7.5 | 121.5 | 110.0 | 0 | - | 0 | 50 | |
| Black | Nov-14 | 830 | 7.5 | 6.0 | 6.0 | 111.0 | 97.0 | 3 | - | 0 | 100 | |
| Black | Nov-15 | 800 | 7.0 | 5.0 | 5.0 | 102.5 | 85.0 | 0 | - | 0 | 95 | |
| Black | Nov-16 | 800 | 7.0 | 6.0 | 6.0 | 98.0 | 79.0 | 0 | - | 0 | 100 | |
| Black | Nov-17 | 830 | 7.0 | 5.0 | 5.0 | 92.0 | 75.0 | 0 | - | 0 | 20 | |
| Black | Nov-18 | 830 | 6.0 | 4.0 | 4.0 | 88.0 | 69.0 | 0 | - | 0 | 30 | |
| Black | Nov-19 | 830 | 5.0 | 4.0 | 4.0 | 84.0 | 66.0 | 2 | - | 0 | 100 | |
| Black | Nov-20 | 900 | 5.0 | 3.0 | 3.0 | 81.0 | 61.0 | 0 | - | 0 | 15 | |
| Black | Nov-21 | 900 | 6.0 | 4.0 | 4.0 | 78.0 | 57.0 | 2 | - | 0 | 100 | |
| Black | Nov-22 | 900 | 5.0 | 4.0 | 4.0 | 79.0 | 56.0 | 1 | - | 0 | 100 | |
| Black | Nov-23 | 830 | 6.5 | 5.0 | 5.0 | 108.0 | 89.0 | 3 | - | 0 | 100 | fence dropped |
| Black | Nov-24 | 900 | 8.0 | 8.0 | 8.0 | 135.0 | 118.0 | 0 | - | 0 | 90 | |
| Black | Nov-25 | 1000 | 6.0 | 6.0 | 6.0 | 125.0 | 105.0 | 0 | NW | 16 | 60 | |
| Black | Nov-26 | 1000 | 5.0 | 5.0 | 5.0 | 110.0 | 92.0 | 0 | NW | 8 | 85 | |

Appendix A. Physical data for Black Creek, French Creek and theTrent River, October to December, 1990.

| Stream | Date | Time | Temperature | | | Water level | | Weather | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Maximum (C) | Minimum (C) | Present (C) | Guage 1 (cm) | Guage 2 (cm) | Rain | Wind dir. | Wind spd. (km) | % cloud cover | |
| Black | Nov-27 | 1100 | 3.0 | 3.0 | 3.0 | 92.0 | 73.0 | 0 | - | 0 | 50 | |
| Black | Nov-28 | 1100 | 4.0 | 4.0 | 4.0 | 85.0 | 70.0 | 3 | NW | 24 | 100 | |
| Black | Nov-29 | 1100 | 4.0 | 4.0 | 4.0 | 135.0 | 120.0 | 1 | NW | 8 | 100 | |
| Black | Nov-30 | 1100 | 3.0 | 3.0 | 3.0 | 118.0 | 105.0 | 0 | - | 0 | 50 | |
| Black | Dec-01 | 1100 | 3.0 | 3.0 | 3.0 | 110.0 | 92.0 | 0 | SE | 32 | 60 | |
| Black | Dec-02 | 1100 | 3.0 | 3.0 | 3.0 | 78.0 | 60.0 | 4 | SE | 16 | 100 | |
| Black | Dec-03 | 1100 | 6.0 | 6.0 | 6.0 | 160.0 | 125.0 | 4 | SE | 48 | 100 | G#2 topped |
| Black | Dec-04 | 1100 | 5.0 | 5.0 | 5.0 | 182.0 | 125.0 | 0 | - | 0 | 40 | G#2 topped |
| Black | Dec-05 | 1100 | 5.0 | 5.0 | 5.0 | 162.0 | 125.0 | 0 | - | 0 | 99 | G#2 topped |
| Black | Dec-06 | 1100 | 6.0 | 6.0 | 6.0 | 125.0 | - | 1 | - | 0 | 100 | G#2 washed out |
| Black | Dec-07 | 1100 | 5.0 | 3.0 | 3.0 | 100.0 | - | 0 | - | 0 | 95 | |
| Black | Dec-08 | 1100 | 5.0 | 4.0 | 4.0 | 95.0 | - | 0 | - | 0 | 100 | |
| Black | Dec-09 | 1100 | 5.0 | 3.0 | 3.0 | 90.0 | - | 0 | - | 0 | 75 | |
| Black | Dec-10 | 1100 | 5.0 | 5.0 | 5.0 | 85.0 | - | 0 | - | 0 | 80 | |
| Black | Dec-11 | 1100 | 4.0 | 3.0 | 3.0 | 80.0 | - | 0 | - | 0 | 25 | |
| Black | Dec-12 | 1100 | 4.0 | 4.0 | 4.0 | 85.0 | - | 2 | NW | 8 | 100 | |
| French | Sep-27 | 1530 | - | - | 13.0 | 25.0 | 5.0 | 0 | SE | 8 | 10 | |
| French | Sep-28 | 1200 | 13.0 | 11.5 | 12.0 | 25.0 | 5.0 | 0 | SE | 8 | 100 | |
| French | Sep-29 | 900 | 13.0 | 12.0 | 12.5 | 26.0 | 5.0 | 0 | N | 8 | 0 | |
| French | Sep-30 | 930 | 13.0 | 10.0 | 11.0 | 26.0 | 5.0 | 0 | - | 0 | 10 | |
| French | Oct-01 | 830 | 12.0 | 10.5 | 11.0 | 26.0 | 5.0 | 0 | W | 8 | 80 | |
| French | Oct-02 | 830 | 11.5 | 10.5 | 11.0 | 26.0 | 5.0 | 0 | - | 0 | 100 | |
| French | Oct-03 | 830 | 11.0 | 10.0 | 11.0 | 27.0 | 5.5 | 1 | SE | 24 | 100 | |
| French | Oct-04 | 845 | 12.0 | 11.0 | 11.5 | 27.0 | 5.5 | 0 | S | 8 | 100 | |
| French | Oct-05 | 900 | 11.5 | 9.5 | 9.5 | 28.0 | 6.0 | 0 | - | 0 | 0 | |
| French | Oct-06 | 845 | 10.0 | 8.5 | 8.5 | 27.5 | 5.5 | 0 | - | 0 | 0 | |
| French | Oct-07 | 900 | 9.0 | 8.0 | 9.0 | 27.5 | 5.5 | 0 | - | 0 | 80 | |
| French | Oct-08 | 900 | 10.0 | 8.5 | 9.5 | 28.5 | 6.5 | 0 | - | 0 | 90 | |
| French | Oct-09 | 900 | 11.0 | 9.5 | 10.5 | 28.5 | 6.5 | 1 | SE | 16 | 100 | |
| French | Oct-10 | 915 | 11.0 | 9.0 | 9.0 | 29.0 | 7.0 | 0 | - | 0 | 0 | |

Appendix A. Physical data for Black Creek, French Creek and theTrent River, October to December, 1990.

| Stream | Date | Time | Temperature | | | Water level | | Weather | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Maximum (C) | Minimum (C) | Present (C) | Guage 1 (cm) | Guage 2 (cm) | Rain | Wind dir. | Wind spd. (km) | % cloud cover | |
| French | Oct-11 | 900 | 9.5 | 8.5 | 8.5 | 28.5 | 6.5 | 0 | - | 0 | 100 | |
| French | Oct-12 | 900 | 8.0 | 8.5 | 8.5 | 30.0 | 7.5 | 0 | - | 0 | 60 | |
| French | Oct-13 | 900 | 9.0 | 8.0 | 8.5 | 32.5 | 10.5 | 0 | - | 0 | 50 | |
| French | Oct-14 | 900 | 9.0 | 8.5 | 9.0 | 30.5 | 9.5 | 2 | - | 0 | 100 | |
| French | Oct-15 | 930 | 8.5 | 8.0 | 8.0 | 32.0 | 10.5 | 0 | - | 0 | 100 | |
| French | Oct-16 | 900 | 8.5 | 8.0 | 8.0 | 32.0 | 10.5 | 0 | - | 0 | 0 | |
| French | Oct-17 | 900 | 8.0 | 7.5 | 8.0 | 31.0 | 10.0 | 0 | SE | 24 | 100 | heavy rain @ noon |
| French | Oct-18 | 900 | 8.0 | 7.5 | 8.0 | 32.0 | 10.5 | 0 | - | 0 | 100 | |
| French | Oct-19 | 900 | 8.0 | 7.0 | 7.0 | 37.0 | 16.0 | 0 | NW | 8 | 0 | |
| French | Oct-20 | 900 | 7.0 | 6.0 | 6.0 | 35.0 | 15.0 | 0 | - | 0 | 100 | |
| French | Oct-21 | 800 | 8.0 | 6.0 | 7.0 | 35.0 | 15.0 | 0 | - | 0 | 100 | first fish |
| French | Oct-22 | 900 | 7.5 | 5.0 | 6.0 | 40.0 | 21.0 | 0 | - | 0 | 70 | |
| French | Oct-23 | 900 | 7.5 | 6.0 | 6.5 | 37.0 | 18.0 | 2 | - | 0 | 100 | |
| French | Oct-24 | 830 | 8.0 | 7.0 | 7.5 | 34.0 | 16.0 | 3 | SE | 0 | 100 | |
| French | Oct-25 | 830 | 9.5 | 8.0 | 9.0 | 54.0 | 36.0 | 1 | SE | 16 | 100 | jack panels on/off |
| French | Oct-26 | 830 | 9.0 | 8.0 | 8.0 | 70.0 | 54.5 | 0 | - | 0 | 50 | |
| French | Oct-27 | 830 | 8.5 | 8.0 | 8.0 | 55.0 | 40.0 | 0 | SW | 16 | 100 | |
| French | Oct-28 | 900 | 8.5 | 8.0 | 8.0 | 74.0 | 55.5 | 0 | SE | 40 | 100 | |
| French | Oct-29 | 830 | 8.0 | 7.0 | 7.0 | 60.0 | 44.0 | 0 | SW | 32 | 100 | |
| French | Oct-30 | 830 | 7.0 | 6.5 | 6.5 | 73.0 | 54.5 | 0 | - | 0 | 50 | |
| French | Oct-31 | 830 | 7.0 | 6.0 | 6.0 | 62.0 | 45.0 | 0 | - | 0 | 0 | |
| French | Nov-01 | 830 | 6.0 | 5.5 | 5.5 | 53.0 | 37.0 | 0 | - | 0 | 0 | |
| French | Nov-02 | 830 | 5.5 | 5.0 | 5.0 | 49.0 | 33.0 | 0 | - | 0 | 100 | |
| French | Nov-03 | 830 | 6.0 | 5.0 | 5.0 | 48.0 | 30.5 | 1 | SE | 24 | 100 | |
| French | Nov-04 | 830 | 6.5 | 5.0 | 6.0 | 51.0 | 34.0 | 0 | - | 0 | 75 | |
| French | Nov-05 | 830 | 6.5 | 6.0 | 6.0 | 46.0 | 30.0 | 0 | - | 0 | 100 | |
| French | Nov-06 | 830 | 6.0 | 5.0 | 5.0 | 45.0 | 28.0 | 0 | - | 0 | 10 | |
| French | Nov-07 | 830 | 6.0 | 5.0 | 5.0 | 45.0 | 28.0 | 0 | - | 0 | 100 | |
| French | Nov-08 | 830 | 6.0 | 5.0 | 5.5 | 47.0 | 29.0 | 0 | - | 0 | 100 | |
| French | Nov-09 | 830 | 6.0 | 5.5 | 5.5 | 78.0 | 58.0 | 3 | - | 0 | 100 | |

Appendix A. Physical data for Black Creek, French Creek and theTrent River, October to December, 1990.

| Stream | Date | Time | Temperature | | | Water level | | Weather | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Maximum (C) | Minimum (C) | Present (C) | Guage 1 (cm) | Guage 2 (cm) | Rain | Wind dir. | Wind spd. (km) | % cloud cover | |
| French | Nov-10 | 830 | 7.0 | 5.5 | 6.0 | 116.0 | 85.0 | 4 | - | 0 | 100 | fence dropped |
| French | Nov-11 | 830 | 8.5 | 6.0 | 8.0 | 143.0 | 129.0 | 1 | SW | 24 | 100 | |
| French | Nov-12 | 830 | 8.0 | 7.0 | 8.0 | - | 85.0 | 0 | NE | 32 | 95 | |
| French | Nov-13 | | - | - | - | - | - | - | - | - | - | no data |
| French | Nov-14 | 830 | 10.0 | 6.0 | 7.0 | 82.0 | 71.0 | 1 | - | 0 | 100 | |
| French | Nov-15 | 830 | 7.0 | 6.5 | 6.5 | 71.0 | 63.0 | 0 | SE | 8 | 100 | |
| French | Nov-16 | 830 | 8.0 | 6.5 | 7.0 | 68.0 | 59.0 | 0 | SE | 8 | 100 | |
| French | Nov-17 | 830 | 7.5 | 7.0 | 7.0 | 67.0 | 58.5 | 0 | SE | 8 | 0 | |
| French | Nov-18 | 900 | 6.0 | 5.0 | 5.0 | 60.0 | 52.0 | 0 | - | 0 | 0 | |
| French | Nov-19 | 900 | 6.0 | 5.0 | 5.0 | 56.0 | 48.0 | 2 | SE | 16 | 100 | |
| French | Nov-20 | 840 | 6.0 | 4.0 | 4.0 | 54.0 | 47.5 | 0 | - | 0 | 0 | |
| French | Nov-21 | 840 | 5.0 | 4.5 | 5.0 | 52.5 | 44.5 | 0 | - | 0 | 100 | |
| French | Nov-22 | 1530 | 6.0 | 4.0 | 5.0 | 56.0 | 49.0 | 2 | SE | 32 | 100 | |
| French | Nov-23 | 900 | 7.0 | 6.0 | 6.0 | 82.0 | 76.0 | 2 | - | 0 | 100 | |
| French | Nov-24 | 900 | 6.5 | 6.0 | 6.0 | 105.0 | 95.0 | 0 | - | 0 | 100 | |
| French | Nov-25 | 900 | 7.0 | 6.0 | 6.0 | 77.0 | 72.0 | 0 | - | 0 | 25 | |
| French | Nov-26 | 900 | - | - | - | 67.0 | 62.0 | 0 | - | 0 | 60 | no temps |
| French | Nov-27 | 1000 | - | - | 4.0 | 57.0 | 61.5 | 0 | - | 0 | 0 | |
| French | Nov-27 | 1000 | - | - | 4.0 | 57.0 | 61.5 | 0 | - | 0 | 0 | |
| French | Nov-28 | 1000 | 4.5 | 3.5 | 4.5 | 53.0 | 57.5 | 2 | SE | 8 | 100 | |
| French | Nov-29 | 1000 | 6.5 | 4.0 | 6.0 | 133.0 | 127.0 | 0 | - | 0 | 60 | |
| French | Nov-30 | 1000 | 6.0 | 4.0 | 4.5 | 79.0 | 77.0 | 0 | - | 0 | 90 | |
| French | Dec-01 | 900 | 6.0 | 5.0 | 5.0 | 66.0 | 65.0 | 0 | - | 0 | 70 | |
| French | Dec-02 | 900 | 4.0 | 3.0 | 3.0 | 59.0 | 57.0 | 1 | - | 0 | 100 | |
| French | Dec-03 | 900 | 4.0 | 3.0 | 3.0 | 105.0 | 100.0 | 2 | SE | 40 | 100 | |
| French | Dec-04 | 900 | 4.0 | 3.0 | 3.0 | 150.0 | 150.0 | 0 | SE | 16 | 100 | |
| French | Dec-05 | 900 | 4.0 | 3.0 | 3.0 | 88.0 | 100.0 | 0 | - | 0 | 100 | |
| French | Dec-06 | 900 | 6.0 | - | - | 73.0 | 80.0 | 0 | - | 0 | 100 | |
| French | Dec-07 | 900 | 4.0 | - | - | 73.0 | 70.0 | 0 | - | 0 | 0 | |
| French | Dec-08 | 900 | 5.0 | - | - | 87.0 | 100.0 | 0 | SE | 32 | 100 | |

Appendix A. Physical data for Black Creek, French Creek and theTrent River, October to December, 1990.

| Stream | Date | Time | Temperature | | | Water level | | Weather | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Maximum (C) | Minimum (C) | Present (C) | Guage 1 (cm) | Guage 2 (cm) | Rain | Wind dir. | Wind spd. (km) | % cloud cover | |
| French | Dec-09 | 900 | 5.0 | - | - | 79.0 | 90.0 | 2 | - | 0 | 100 | |
| French | Dec-10 | 900 | 5.0 | - | - | 71.0 | 80.0 | 0 | - | 0 | 100 | |
| French | Dec-11 | 900 | 4.0 | - | 4.0 | 65.0 | 75.0 | 0 | - | 0 | 0 | |
| French | Dec-12 | 900 | 4.0 | - | 4.0 | 60.0 | 73.0 | 1 | SE | 32 | 100 | |
| French | Dec-13 | 900 | 4.0 | - | 4.0 | 58.0 | 70.0 | 0 | - | 0 | 0 | |
| French | Dec-14 | 900 | 3.5 | - | 3.5 | 55.0 | 68.0 | 2 | SE | 32 | 100 | |
| Trent | Oct-01 | 900 | - | - | 13.0 | 19.0 | 25.0 | 0 | SW | 8 | 25 | no mx/mn til Nov-2 |
| Trent | Oct-02 | 900 | - | - | 12.0 | 19.0 | 25.0 | 0 | - | 0 | 100 | |
| Trent | Oct-03 | 900 | - | - | 9.0 | 19.0 | 22.0 | 3 | SW | 8 | 100 | |
| Trent | Oct-04 | 900 | - | - | 11.0 | 26.0 | 31.0 | 3 | W | 8 | 100 | |
| Trent | Oct-05 | 900 | - | - | 8.0 | 29.0 | 37.0 | 0 | - | 0 | 20 | |
| Trent | Oct-06 | 900 | - | - | 8.0 | 63.0 | 38.5 | 0 | - | 0 | 0 | |
| Trent | Oct-07 | 900 | - | - | 8.5 | 76.5 | 27.0 | 0 | SE | 8 | 75 | |
| Trent | Oct-08 | 900 | - | - | 9.0 | 60.0 | 26.5 | 0 | SW | 8 | 100 | |
| Trent | Oct-09 | 900 | - | - | 12.0 | 22.0 | 30.0 | 3 | SE | 16 | 100 | |
| Trent | Oct-10 | 900 | - | - | 9.0 | 21.5 | 29.0 | 0 | SW | 16 | 10 | |
| Trent | Oct-11 | 900 | - | - | 7.0 | 22.0 | 27.0 | 0 | SE | 8 | 100 | heavy rain @ eve. |
| Trent | Oct-12 | 900 | - | - | 5.0 | 35.5 | 46.0 | 0 | SE | 8 | 50 | |
| Trent | Oct-13 | 900 | - | - | 5.0 | 31.0 | 40.0 | 0 | SE | 8 | 25 | |
| Trent | Oct-14 | 900 | - | - | 4.0 | 28.0 | 37.0 | 3 | SE | 8 | 100 | |
| Trent | Oct-15 | 900 | - | - | 4.0 | 27.0 | 39.0 | 0 | SE | 8 | 50 | |
| Trent | Oct-16 | 900 | - | - | 5.0 | 29.0 | 37.0 | 0 | SE | 8 | 0 | |
| Trent | Oct-17 | 900 | - | - | 4.0 | 28.0 | 36.5 | 3 | SW | 16 | 100 | |
| Trent | Oct-18 | 900 | - | - | 6.0 | 36.0 | 45.0 | 0 | SE | 8 | 75 | |
| Trent | Oct-19 | 900 | - | - | 4.0 | 52.0 | 51.0 | 0 | SE | 8 | 10 | |
| Trent | Oct-20 | 900 | - | - | 4.0 | 67.0 | 53.0 | 0 | SE | 8 | 100 | |
| Trent | Oct-21 | 900 | - | - | 5.0 | 103.0 | 73.0 | 0 | SE | 8 | 100 | |
| Trent | Oct-22 | 900 | - | 5.0 | 5.0 | 76.0 | 55.0 | 0 | SW | 8 | 75 | |
| Trent | Oct-23 | 900 | - | - | - | 68.0 | 48.0 | 0 | SE | 16 | 100 | no temps |
| Trent | Oct-24 | 900 | - | 7.0 | 8.0 | 74.0 | 79.0 | 4 | SE | 16 | 100 | |

Appendix A. Physical data for Black Creek, French Creek and theTrent River, October to December, 1990.

| Stream | Date | Time | Temperature | | | Water level | | Weather | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Maximum (C) | Minimum (C) | Present (C) | Guage 1 (cm) | Guage 2 (cm) | Rain | Wind dir. | Wind spd. (km) | % cloud cover | |
| Trent | Oct-25 | 900 | - | - | - | 149.0 | - | 4 | SE | 24 | 100 | no temps or G#2 |
| Trent | Oct-26 | 900 | - | 5.0 | 5.0 | 84.0 | 82.0 | 0 | SE | 24 | 100 | |
| Trent | Oct-27 | 900 | - | 4.0 | 7.0 | 79.0 | 81.0 | 0 | SW | 24 | 100 | |
| Trent | Oct-28 | 900 | - | - | - | 102.0 | 95.0 | 0 | SE | 24 | 75 | no temps |
| Trent | Oct-29 | 900 | - | - | - | 119.0 | - | 2 | SE | 24 | 100 | no temps or G#2 |
| Trent | Oct-30 | 900 | - | - | - | 108.0 | - | 0 | SE | 8 | 50 | no temps or G#2 |
| Trent | Oct-31 | 900 | - | 4.0 | 7.0 | 94.0 | 87.0 | 0 | SE | 8 | 0 | |
| Trent | Nov-01 | 900 | - | 4.0 | 6.0 | 64.0 | 62.0 | 0 | S | 8 | 0 | |
| Trent | Nov-02 | 900 | 6.0 | 4.0 | 4.0 | 63.0 | 60.0 | 1 | SE | 8 | 100 | |
| Trent | Nov-03 | 900 | 5.0 | 4.0 | 4.0 | 21.0 | 60.0 | 1 | SE | 8 | 100 | |
| Trent | Nov-04 | 900 | 6.0 | 4.0 | 4.0 | 52.0 | 64.0 | 0 | S | 8 | 10 | |
| Trent | Nov-05 | 900 | 6.0 | 4.0 | 5.0 | 50.0 | 62.0 | 0 | SE | 8 | 0 | |
| Trent | Nov-06 | 900 | 6.0 | 4.0 | 4.0 | 54.0 | 60.0 | 0 | SE | 16 | 100 | |
| Trent | Nov-07 | 900 | 6.0 | 4.0 | 4.0 | 64.0 | 58.0 | 0 | SE | 8 | 100 | |
| Trent | Nov-08 | 900 | 6.0 | 4.0 | 5.0 | 60.0 | 58.0 | 0 | S | 8 | 100 | |
| Trent | Nov-09 | 900 | 5.0 | 4.0 | 4.0 | 62.0 | 64.0 | 4 | SE | 8 | 100 | |
| Trent | Nov-10 | 900 | - | - | - | 143.0 | - | 4 | SE | 8 | 100 | no temps or G#2 |
| Trent | Nov-11 | 900 | - | - | - | 98.0 | - | 3 | S | 8 | 100 | no temps or G#2 |
| Trent | Nov-12 | 900 | - | - | - | 122.0 | - | 4 | SE | 16 | 100 | no temps or G#2 |
| Trent | Nov-13 | 900 | - | - | - | 98.0 | - | 0 | SE | 16 | 50 | no temps or G#2 |
| Trent | Nov-14 | 900 | 7.0 | 4.0 | 4.0 | 72.0 | 70.0 | 2 | SE | 24 | 100 | |
| Trent | Nov-15 | 900 | 5.0 | 3.0 | 4.0 | 84.0 | 71.5 | 0 | SE | 8 | 100 | |
| Trent | Nov-16 | 900 | 5.0 | 2.0 | 3.0 | 79.5 | 71.6 | 0 | S | 8 | 100 | |
| Trent | Nov-17 | 900 | 5.0 | 3.0 | 4.0 | 77.0 | 69.0 | 1 | S | 16 | 100 | |
| Trent | Nov-18 | 900 | 6.0 | 3.0 | 4.0 | 77.0 | 68.0 | 3 | S | 8 | 100 | |
| Trent | Nov-19 | 900 | 5.0 | 3.0 | 4.0 | 76.0 | 68.0 | 0 | - | 0 | 100 | |
| Trent | Nov-20 | 900 | 5.0 | 3.0 | 5.0 | 71.5 | 67.0 | 0 | SE | 8 | 0 | |
| Trent | Nov-21 | 900 | 5.0 | 3.0 | 5.0 | 88.6 | 68.0 | 0 | - | 0 | 100 | |
| Trent | Nov-22 | 900 | - | - | - | 190.0 | - | 5 | SE | 24 | 100 | G#1 topped |
| Trent | Nov-23 | 700 | - | - | - | 186.0 | - | 2 | SE | 16 | 100 | |

Appendix A. Physical data for Black Creek, French Creek and theTrent River, October to December, 1990.

| Stream | Date | Time | Temperature | | | Water level | | Weather | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Maximum (C) | Minimum (C) | Present (C) | Guage 1 (cm) | Guage 2 (cm) | Rain | Wind dir. | Wind spd. (km) | % cloud cover | |
| Trent | Nov-24 | 700 | - | - | - | 83.0 | - | 3 | S | 16 | 100 | |
| Trent | Nov-25 | 700 | - | - | - | 78.0 | - | 5 | SE | 32 | 100 | |
| Trent | Nov-26 | 700 | - | - | - | 78.0 | - | 2 | SE | 16 | 100 | |
| Trent | Nov-27 | 700 | 6.0 | 3.0 | 4.0 | 77.0 | 70.0 | 0 | S | 24 | 100 | |
| Trent | Nov-28 | 700 | 6.0 | 3.0 | 4.0 | 74.0 | 65.0 | 0 | SE | 8 | 75 | |
| Trent | Nov-29 | 700 | 5.0 | 3.0 | 4.0 | 72.0 | 61.0 | 0 | SE | 8 | 80 | |
| Trent | Nov-30 | 700 | 5.0 | 3.0 | 5.0 | 70.0 | 61.0 | 0 | SE | 16 | 100 | |
| Trent | Dec-01 | 700 | 5.0 | 3.0 | 5.0 | 73.0 | 68.0 | 0 | S | 8 | 80 | |
| Trent | Dec-02 | 700 | 5.0 | 3.0 | 5.0 | 74.0 | 70.0 | 0 | SE | 8 | 100 | |
| Trent | Dec-03 | 700 | - | - | - | 94.0 | - | 5 | SE | 40 | 100 | no temps or G#2 |
| Trent | Dec-04 | 900 | - | - | - | 194.0 | - | 2 | SE | 8 | 100 | no temps or G#2 |
| Trent | Dec-05 | 900 | - | - | - | 112.0 | - | 0 | S | 8 | 75 | no temps or G#2 |
| Trent | Dec-06 | 900 | - | - | - | 98.0 | - | 0 | SE | 24 | 100 | no temps or G#2 |
| Trent | Dec-07 | 900 | - | - | - | 115.0 | - | 3 | SE | 8 | 100 | no temps or G#2 |
| Trent | Dec-08 | 900 | - | - | - | 118.0 | - | 0 | SE | 16 | 100 | no temps or G#2 |
| Trent | Dec-09 | 900 | - | - | - | 107.0 | - | 2 | SE | 24 | 100 | no temps or G#2 |
| Trent | Dec-10 | 900 | - | - | - | 94.0 | 93.0 | 0 | - | 0 | 0 | |
| Trent | Dec-11 | 900 | - | - | - | 77.0 | 84.0 | 0 | NW | 8 | 75 | |
| Trent | Dec-12 | 900 | 4.0 | 3.0 | 3.0 | 73.0 | 76.0 | 0 | NW | 24 | 100 | |
| Trent | Dec-13 | 900 | 5.0 | 3.0 | 3.0 | 70.0 | 71.0 | 0 | SE | 8 | 25 | |
| Trent | Dec-14 | 900 | 4.0 | 3.0 | 3.0 | 72.0 | 69.0 | 1 | SE | 16 | 100 | |

# APPENDIX B

Fence Counts and Upstream Recoveries of Adult Coho Salmon Used in the Mark-recapture Estimates for Black Creek, French Creek, and the Trent River, 1990.

Appendix B1 Black Creek fence enumerations and upstream recoveries of adult and jack coho used in mark-recapture estimates, 1990. Primary tags were applied at the counting fence and secondary tags were applied upstream. Numbers of primary and secondary tags at large are calculated as the number of fish tagged less the number of fish removed for sampling or as carcasses.

| Census date | Number examined at fence | Number released at fence | Number examined upstream | Number released upstream | Total number examined | Number primary recaps | Number secondary recaps | Total number recaps | Primary tags applied | Secondary tags applied | Total tags applied | Primary tags at large | Secondary tags at large | Total tags at large |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adults | | | | | | | | | | | | | | |
| Oct-25 | 139 | 139 | | | 139 | | | 0 | 139 | | 139 | 0 | 0 | 0 |
| Oct-26 | 64 | 64 | | | 64 | | | 0 | 64 | | 64 | 139 | 0 | 139 |
| Oct-27 | 60 | 60 | | | 60 | | | 0 | 60 | | 60 | 203 | 0 | 203 |
| Oct-28 | 97 | 97 | | | 97 | | | 0 | 97 | | 97 | 263 | 0 | 263 |
| Oct-29 | 70 | 70 | | | 70 | | | 0 | 69 | | 69 | 360 | 0 | 360 |
| Oct-30 | 16 | 16 | | | 16 | | | 0 | 16 | | 16 | 429 | 0 | 429 |
| Oct-31 | 2 | 2 | | | 2 | | | 0 | 2 | | 2 | 445 | 0 | 445 |
| Nov-01 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 447 | 0 | 447 |
| Nov-02 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 447 | 0 | 447 |
| Nov-03 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 447 | 0 | 447 |
| Nov-04 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 447 | 0 | 447 |
| Nov-05 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 447 | 0 | 447 |
| Nov-06 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 447 | 0 | 447 |
| Nov-07 | 7 | 7 | | | 7 | | | 0 | 7 | | 7 | 447 | 0 | 447 |
| Nov-08 | 1 | 1 | | | 1 | | | 0 | 1 | | 1 | 454 | 0 | 454 |
| Nov-09 | 7 | 7 | | | 7 | | | 0 | 7 | | 7 | 455 | 0 | 455 |
| Nov-10 | 57 | 57 | | | 57 | | | 0 | 57 | | 57 | 462 | 0 | 462 |
| Nov-11 | 32 | 32 | | | 32 | | | 0 | 32 | | 32 | 519 | 0 | 519 |
| Nov-12 | 176 | 176 | | | 176 | | | 0 | 176 | | 176 | 551 | 0 | 551 |
| Nov-13 | 64 | 64 | | | 64 | | | 0 | 64 | | 64 | 727 | 0 | 727 |
| Nov-14 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 791 | 0 | 791 |
| Nov-15 | 3 | 3 | | | 3 | | | 0 | 3 | | 3 | 791 | 0 | 791 |
| Nov-16 | 1 | 1 | | | 1 | | | 0 | 1 | | 1 | 794 | 0 | 794 |
| Nov-17 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 795 | 0 | 795 |
| Nov-18 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 795 | 0 | 795 |
| Nov-19 | 0 | 0 | 24 | 24 | 24 | 23 | | 23 | 0 | 1 | 1 | 795 | 0 | 795 |
| Nov-20 | 0 | 0 | 5 | 5 | 5 | 5 | | 5 | 0 | 0 | 0 | 795 | 1 | 796 |
| Nov-21 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 795 | 1 | 796 |
| Nov-22 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 795 | 1 | 796 |
| Nov-23 | 12 | 12 | | | 12 | | | 0 | 12 | | 12 | 795 | 1 | 796 |
| Nov-24 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Nov-25 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Nov-26 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Nov-27 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Nov-28 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |

Appendix B1 Black Creek fence enumerations and upstream recoveries of adult and jack coho used in mark-recapture estimates, 1990. Primary tags were applied at the counting fence and secondary tags were applied upstream. Numbers of primary and secondary tags at large are calculated as the number of fish tagged less the number of fish removed for sampling or as carcasses.

| Census date | Number examined at fence | Number released at fence | Number examined upstream | Number released upstream | Total number examined | Number primary recaps | Number secondary recaps | Total number recaps | Primary tags applied | Secondary tags applied | Total tags applied | Primary tags at large | Secondary tags at large | Total tags at large |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nov-29 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Nov-30 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Dec-01 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Dec-02 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Dec-03 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Dec-04 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Dec-05 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Dec-06 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Dec-07 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Dec-08 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Dec-09 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 807 | 1 | 808 |
| Dec-10 | 0 | 0 | 111 | 108 | 111 | 32 | | 32 | 0 | 76 | 76 | 807 | 1 | 808 |
| Dec-11 | 0 | 0 | 3 | 3 | 3 | 0 | | 0 | 0 | 3 | 3 | 804 | 77 | 881 |
| Dec-12 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 804 | 80 | 884 |
| Dec-13 | 0 | 0 | 11 | 9 | 11 | 1 | 1 | 2 | 0 | 8 | 8 | 804 | 80 | 884 |
| Totals | 808 | 808 | 154 | 149 | 962 | 61 | 1 | 62 | 807 | 88 | 895 | 807 | 88 | 895 |
| Jacks | | | | | | | | | | | | | | |
| Oct-25 | 409 | 372 | | | 409 | | | 0 | 372 | | 372 | 0 | 0 | 0 |
| Oct-26 | 46 | 46 | | | 46 | | | 0 | 46 | | 46 | 372 | 0 | 372 |
| Oct-27 | 13 | 4 | | | 13 | | | 0 | 4 | | 4 | 418 | 0 | 418 |
| Oct-28 | 37 | 24 | | | 37 | | | 0 | 24 | | 24 | 422 | 0 | 422 |
| Oct-29 | 23 | 8 | | | 23 | | | 0 | 8 | | 8 | 446 | 0 | 446 |
| Oct-30 | 9 | 7 | | | 9 | | | 0 | 7 | | 7 | 454 | 0 | 454 |
| Oct-31 | 1 | 1 | | | 1 | | | 0 | 1 | | 1 | 461 | 0 | 461 |
| Nov-01 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 462 | 0 | 462 |
| Nov-02 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 462 | 0 | 462 |
| Nov-03 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 462 | 0 | 462 |
| Nov-04 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 462 | 0 | 462 |
| Nov-05 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 462 | 0 | 462 |
| Nov-06 | 0 | 0 | 9 | 9 | 9 | 3 | | 3 | 0 | 6 | 6 | 462 | 0 | 462 |
| Nov-07 | 3 | 0 | | | 3 | | | 0 | 0 | | 0 | 462 | 6 | 468 |
| Nov-08 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 462 | 6 | 468 |
| Nov-09 | 7 | 1 | | | 7 | | | 0 | 1 | | 1 | 462 | 6 | 468 |
| Nov-10 | 4 | 2 | | | 4 | | | 0 | 2 | | 2 | 463 | 6 | 469 |

Appendix B1 Black Creek fence enumerations and upstream recoveries of adult and jack coho used in mark-recapture estimates, 1990. Primary tags were applied at the counting fence and secondary tags were applied upstream. Numbers of primary and secondary tags at large are calculated as the number of fish tagged less the number of fish removed for sampling or as carcasses.

| Census date | Number examined at fence | Number released at fence | Number examined upstream | Number released upstream | Total number examined | Number primary recaps | Number secondary recaps | Total number recaps | Primary tags applied | Secondary tags applied | Total tags applied | Primary tags at large | Secondary tags at large | Total tags at large |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nov-11 | 10 | 3 | | | 10 | | | 0 | 3 | | 3 | 465 | 6 | 471 |
| Nov-12 | 12 | 12 | | | 12 | | | 0 | 12 | | 12 | 468 | 6 | 474 |
| Nov-13 | 5 | 5 | | | 5 | | | 0 | 5 | | 5 | 480 | 6 | 486 |
| Nov-14 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 6 | 491 |
| Nov-15 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 6 | 491 |
| Nov-16 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 6 | 491 |
| Nov-17 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 6 | 491 |
| Nov-18 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 6 | 491 |
| Nov-19 | 0 | 0 | 23 | 23 | 23 | 7 | | 7 | 0 | 16 | 16 | 485 | 6 | 491 |
| Nov-20 | 0 | 0 | 15 | 15 | 15 | 3 | | 3 | 0 | 12 | 12 | 485 | 22 | 507 |
| Nov-21 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Nov-22 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Nov-23 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Nov-24 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Nov-25 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Nov-26 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Nov-27 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Nov-28 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Nov-29 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Nov-30 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Dec-01 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Dec-02 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Dec-03 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Dec-04 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Dec-05 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Dec-06 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Dec-07 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Dec-08 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Dec-09 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 485 | 34 | 519 |
| Dec-10 | 0 | 0 | 6 | 4 | 6 | 0 | | 0 | 0 | 4 | 4 | 485 | 34 | 519 |
| Totals | 579 | 485 | 53 | 51 | 632 | 13 | 0 | 13 | 485 | 38 | 523 | 476 | 38 | 514 |

Appendix B2 French Creek fence enumerations and upstream recoveries of adult and jack coho used in mark-recapture estimates, 1990. Primary tags were applied at the counting fence and secondary tags were applied upstream. Numbers of primary and secondary tags at large are calculated as the number of fish tagged less the number of fish removed for sampling or as carcasses.

| Census date | Number examined at fence | Number released at fence | Number examined upstream | Number released upstream | Total number examined | Number primary recaps | Number secondary recaps | Total number recaps | Primary tags applied | Secondary tags applied | Total tags applied | Primary tags at large | Secondary tags at large | Total tags at large |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adults | | | | | | | | | | | | | | |
| Oct-25 | 9 | 9 | | | 9 | | | 0 | 9 | | 9 | 0 | 0 | 0 |
| Oct-26 | 22 | 22 | | | 22 | | | 0 | 22 | | 22 | 9 | 0 | 9 |
| Oct-27 | 29 | 29 | | | 29 | | | 0 | 29 | | 29 | 31 | 0 | 31 |
| Oct-28 | 6 | 6 | | | 6 | | | 0 | 6 | | 6 | 60 | 0 | 60 |
| Oct-29 | 3 | 2 | | | 3 | | | 0 | 2 | | 2 | 66 | 0 | 66 |
| Oct-30 | 12 | 10 | | | 12 | | | 0 | 10 | | 10 | 68 | 0 | 68 |
| Oct-31 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 78 | 0 | 78 |
| Nov-01 | 1 | 1 | | | 1 | | | 0 | 1 | | 1 | 78 | 0 | 78 |
| Nov-02 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 79 | 0 | 79 |
| Nov-03 | 0 | 0 | 3 | 3 | 3 | 3 | 0 | 3 | 0 | | 0 | 79 | 0 | 79 |
| Nov-04 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 79 | 0 | 79 |
| Nov-05 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 79 | 0 | 79 |
| Nov-06 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 79 | 0 | 79 |
| Nov-07 | 2 | 1 | | | 2 | | | 0 | 1 | | 1 | 79 | 0 | 79 |
| Nov-08 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 80 | 0 | 80 |
| Nov-09 | 23 | 19 | | | 23 | | | 0 | 19 | | 19 | 80 | 0 | 80 |
| Nov-10 | 7 | 4 | | | 7 | | | 0 | 4 | | 4 | 99 | 0 | 99 |
| Nov-11 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 103 | 0 | 103 |
| Nov-12 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 103 | 0 | 103 |
| Nov-13 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 103 | 0 | 103 |
| Nov-14 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 103 | 0 | 103 |
| Nov-15 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 103 | 0 | 103 |
| Nov-16 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 103 | 0 | 103 |
| Nov-17 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 103 | 0 | 103 |
| Nov-18 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 103 | 0 | 103 |
| Nov-19 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 103 | 0 | 103 |
| Nov-20 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 103 | 0 | 103 |
| Nov-21 | 0 | 0 | 13 | 11 | 13 | 4 | | 4 | 0 | 7 | 7 | 102 | 0 | 102 |
| Nov-22 | 0 | 0 | 2 | 2 | 2 | 1 | | 1 | 0 | 1 | 1 | 102 | 7 | 109 |
| Nov-23 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 102 | 8 | 110 |
| Totals | 114 | 103 | 18 | 16 | 132 | 8 | 0 | 8 | 103 | 8 | 111 | 102 | 8 | 110 |

Appendix B2 French Creek fence enumerations and upstream recoveries of adult and jack coho used in mark-recapture estimates, 1990. Primary tags were applied at the counting fence and secondary tags were applied upstream. Numbers of primary and secondary tags at large are calculated as the number of fish tagged less the number of fish removed for sampling or as carcasses.

| Census date | Number examined at fence | Number released at fence | Number examined upstream | Number released upstream | Total number examined | Number primary recaps | Number secondary recaps | Total number recaps | Primary tags applied | Secondary tags applied | Total tags applied | Primary tags at large | Secondary tags at large | Total tags at large |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jacks | | | | | | | | | | | | | | |
| Oct-21 | 1 | 1 | | | 1 | | | 0 | 1 | | 1 | 0 | 0 | 0 |
| Oct-22 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 1 | 0 | 1 |
| Oct-23 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 1 | 0 | 1 |
| Oct-24 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 1 | 0 | 1 |
| Oct-25 | 33 | 33 | | | 33 | | | 0 | 31 | | 31 | 1 | 0 | 1 |
| Oct-26 | 12 | 12 | | | 12 | | | 0 | 12 | | 12 | 32 | 0 | 32 |
| Oct-27 | 14 | 14 | | | 14 | | | 0 | 14 | | 14 | 44 | 0 | 44 |
| Oct-28 | 3 | 3 | | | 3 | | | 0 | 3 | | 3 | 58 | 0 | 58 |
| Oct-29 | 1 | 1 | | | 1 | | | 0 | 1 | | 1 | 61 | 0 | 61 |
| Oct-30 | 5 | 5 | | | 5 | | | 0 | 5 | | 5 | 62 | 0 | 62 |
| Oct-31 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 67 | 0 | 67 |
| Nov-01 | 1 | 1 | | | 1 | | | 0 | 1 | | 1 | 67 | 0 | 67 |
| Nov-02 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 68 | 0 | 68 |
| Nov-03 | 0 | 0 | 29 | 27 | 29 | 4 | | 4 | 0 | 23 | 23 | 68 | 0 | 68 |
| Nov-04 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 68 | 23 | 91 |
| Nov-05 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 68 | 23 | 91 |
| Nov-06 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 68 | 23 | 91 |
| Nov-07 | 1 | 1 | | | 1 | | | 0 | 1 | | 1 | 68 | 23 | 91 |
| Nov-08 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 69 | 23 | 92 |
| Nov-09 | 7 | 7 | | | 7 | | | 0 | 7 | | 7 | 69 | 23 | 92 |
| Nov-10 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 76 | 23 | 99 |
| Nov-11 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 76 | 23 | 99 |
| Nov-12 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 76 | 23 | 99 |
| Nov-13 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 76 | 23 | 99 |
| Nov-14 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 76 | 23 | 99 |
| Nov-15 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 76 | 23 | 99 |
| Nov-16 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 76 | 23 | 99 |
| Nov-17 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 76 | 23 | 99 |
| Nov-18 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 76 | 23 | 99 |
| Nov-19 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 76 | 23 | 99 |
| Nov-20 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 76 | 23 | 99 |
| Nov-21 | 0 | 0 | 8 | 8 | 8 | 1 | 1 | 2 | 0 | 7 | 7 | 76 | 23 | 99 |
| Nov-22 | 0 | 0 | 4 | 4 | 4 | 0 | | 0 | 0 | 4 | 4 | 76 | 30 | 106 |
| Nov-23 | 0 | 0 | | | 0 | | | 0 | 0 | | 0 | 76 | 34 | 110 |
| Totals | 78 | 78 | 41 | 39 | 119 | 5 | 1 | 6 | 76 | 34 | 110 | 76 | 34 | 110 |

Appendix B3. Trent River adult and jack coho capture data used in mark-recapture estimates, 1990.

| Census date | No. examined upstream | No. released upstream | No. recaps | No. tags applied | No. sacs and carcasses | No. strays recovered | No. tags at large |
|---|---|---|---|---|---|---|---|
| Adults | | | | | | | |
| Oct-23 | 22 | 22 | 0 | 22 | 0 | 0 | 0 |
| Nov-02 | 80 | 80 | 4 | 76 | 0 | 2 | 20 |
| Nov-08 | 47 | 47 | 5 | 42 | 0 | 0 | 96 |
| Nov-20 | 38 | 20 | 6 | 15 | 18 | 5 | 115 |
| Nov-21 | 54 | 49 | 9 | 42 | 5 | 2 | 126 |
| Nov-28 | 21 | 14 | 6 | 8 | 7 | 2 | 159 |
| Totals | 262 | 232 | 30 | 205 | 30 | 11 (a) | 159 |
| Jacks | | | | | | | |
| Oct-23 | 4 | 4 | 0 | 4 | 0 | 0 | 0 |
| Nov-02 | 19 | 17 | 0 | 17 | 2 | 0 | 2 |
| Nov-08 | 5 | 5 | 3 | 2 | 0 | 0 | 19 |
| Nov-21 | 4 | 4 | 0 | 4 | 0 | 0 | 21 |
| Totals | 32 | 30 | 3 | 27 | 2 | 0 | 21 |

(a) 6 captured on Puntledge River; 5 at Roy Cr.; 5 had green Peterson tags.

# APPENDIX C

Total Recovery and Adipose-Clip Recovery of Live Coho Salmon at Black Creek, French Creek, and Trent River, 1990.

Appendix C1. Total recovery and adipose clip recovery of live coho salmon at Black Creek, 1990 (1).

| | Adipose clipped | | | | Total | | | |
|---|---|---|---|---|---|---|---|---|
| | Male | Female | Jack | Total | Male | Female | Jack | Total |
| Oct-25 | 61 | 68 | 394 | 523 | 67 | 76 | 409 | 552 |
| Oct-26 | 21 | 40 | 44 | 105 | 21 | 44 | 46 | 111 |
| Oct-27 | 26 | 25 | 12 | 63 | 27 | 33 | 13 | 73 |
| Oct-28 | 43 | 42 | 31 | 116 | 50 | 47 | 37 | 134 |
| Oct-29 | 26 | 35 | 23 | 84 | 28 | 42 | 23 | 93 |
| Oct-30 | 5 | 8 | 8 | 21 | 7 | 9 | 9 | 25 |
| Oct-31 | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 3 |
| Nov-06 | 0 | 0 | 3 | 3 | 0 | 0 | 6 | 6 |
| Nov-07 | 3 | 2 | 3 | 8 | 3 | 3 | 3 | 9 |
| Nov-08 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Nov-09 | 1 | 5 | 7 | 13 | 2 | 5 | 7 | 14 |
| Nov-10 | 24 | 23 | 4 | 51 | 33 | 24 | 4 | 61 |
| Nov-11 | 14 | 11 | 8 | 33 | 16 | 16 | 10 | 42 |
| Nov-12 | 63 | 93 | 10 | 166 | 71 | 105 | 12 | 188 |
| Nov-13 | 23 | 32 | 5 | 60 | 25 | 39 | 5 | 69 |
| Nov-15 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3 |
| Nov-16 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| Nov-19 | 1 | 0 | 16 | 17 | 1 | 0 | 16 | 17 |
| Nov-20 | 0 | 0 | 11 | 11 | 0 | 0 | 12 | 12 |
| Nov-23 | 5 | 4 | 0 | 9 | 6 | 6 | 0 | 12 |
| Dec-10 | 19 | 54 | 6 | 79 | 20 | 59 | 6 | 85 |
| Dec-11 | 1 | 2 | 0 | 3 | 1 | 2 | 0 | 3 |
| Dec-13 | 1 | 7 | 0 | 8 | 1 | 9 | 0 | 10 |
| Totals | 338 | 452 | 586 | 1376 | 383 | 522 | 619 | 1524 |

(1) Does not include recaptures.

Appendix C2. Total recovery and adipose clip recovery of live coho salmon at French Creek, 1990 (1).

| | Adipose clipped | | | | Total | | | |
|---|---|---|---|---|---|---|---|---|
| | Male | Female | Jack | Total | Male | Female | Jack | Total |
| Oct-21 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| Oct-25 | 5 | 4 | 31 | 40 | 5 | 4 | 34 | 43 |
| Oct-26 | 8 | 11 | 6 | 25 | 11 | 11 | 12 | 34 |
| Oct-27 | 9 | 17 | 10 | 36 | 10 | 19 | 14 | 43 |
| Oct-28 | 3 | 2 | 3 | 8 | 4 | 2 | 3 | 9 |
| Oct-29 | 1 | 2 | 1 | 4 | 1 | 2 | 1 | 4 |
| Oct-30 | 6 | 5 | 4 | 15 | 6 | 6 | 5 | 17 |
| Nov-01 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| Nov-03 | 0 | 0 | 21 | 21 | 0 | 0 | 25 | 25 |
| Nov-07 | 1 | 1 | 0 | 2 | 1 | 1 | 1 | 3 |
| Nov-09 | 13 | 8 | 3 | 24 | 14 | 9 | 7 | 30 |
| Nov-10 | 1 | 6 | 0 | 7 | 1 | 6 | 0 | 7 |
| Nov-21 | 2 | 5 | 6 | 13 | 3 | 6 | 7 | 16 |
| Nov-22 | 1 | 0 | 3 | 4 | 1 | 0 | 4 | 5 |
| Totals | 50 | 61 | 89 | 200 | 57 | 67 | 115 | 239 |

(1) Does not include recaptures.

Appendix C3. Total recovery and adipose clip recovery of live coho salmon at the Trent River, 1990 (1).

| | Adipose clipped | | | | Total | | | |
|---|---|---|---|---|---|---|---|---|
| | Male | Female | Jack | Total | Male | Female | Jack | Total |
| Oct-23 | 1 | 2 | 0 | 3 | 7 | 15 | 4 | 26 |
| Nov-02 | 7 | 21 | 7 | 35 | 32 | 48 | 19 | 99 |
| Nov-08 | 10 | 11 | 0 | 21 | 20 | 27 | 5 | 52 |
| Nov-20 | 16 | 12 | 0 | 28 | 19 | 19 | 0 | 38 |
| Nov-21 | 11 | 10 | 0 | 21 | 30 | 24 | 4 | 58 |
| Nov-28 | 6 | 6 | 0 | 12 | 8 | 7 | 0 | 15 |
| Totals | 51 | 62 | 7 | 120 | 116 | 140 | 32 | 288 |

(1) Does not include recaptures.